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THE

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R. F. HARROD AND E. A. G. ROBINSON

ASSISTED BY R. C. O. MATTHEWS

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THE ECONOMIC JOURNAL

SEPTEMBER 1952

BRITISH AND AMERICAN EXPORTS: A STUDY SUGGESTED BY THE THEORY OF COMPARATIVE COSTS. PART II.[1]

C. Elasticity of Substitution

In Section B of this paper we dealt with observed facts about the prices and quantities of British and American exports of a large number of manufactures in a given period of one or five years, and made some speculations about the possible effects of errors in the data used. We reached the conclusion that, in the years 1934–38 for example, where the relative price of product A was 1% lower than the relative price of product B, the relative quantity of product A tended to be at least 3½% greater than that of product B, and quite possibly 4–4½% greater when allowance is made for bias due to errors of observation. We made no examination of changes over time. It would, therefore, be a bold step to conclude from the facts observed that, in pre-war conditions, a 1% *fall* in a typical product's relative price would tend to lead to a 4–4½% (or even to a 3½%) *rise* in its relative quantity. In view, however, of the difficulties involved in most methods hitherto used for measuring elasticities in international trade,[2] it seems that this possible alternative approach, which might perhaps be called the "commodity comparison" method, should be further explored. A similar type of cross-section analysis is, after all, used when conclusions are drawn about income elasticity of demand from family budgets observed in a given period; although admittedly one set of consumers may be more likely to behave like another set, given the conditions of the latter set, than one manufactured export is to behave like another.

[1] Part I appeared in the Economic Journal for December 1951. The whole article was largely completed before the author took up a temporary appointment in government service.

[2] See Orcutt, *op. cit.*

The "Commodity Comparison" Method versus the "Time Series" Method

Although the commodity comparison method of estimating elasticities in international trade is open to special objections, it avoids certain other difficulties involved in the use of time series.

(1) The latter method often suffers from a paucity of observations. For example, Mr. Chang's estimate of the elasticity of substitution between British and American exports of manufactures in the inter-war years [1] was based on fifteen observations (for the years 1924–38) compared with between 86 and 171 observations in each of the calculations described above.[2]

(2) In the time series method the range of relevant price variation (after allowance has been made for income changes) is often small in relation to the errors of observation—in many cases only 5% or 10%.[3] For example, the standard deviation of the ratio of the U.S. to the U.K. export price indices of manufactures over the period 1922–38 was only 7–8% of the mean, even before allowing for trend or for world income, which, according to Professor A. J. Brown,[4] was highly correlated with relative prices. In the calculations described above, the errors may be greater but the range of price variation is much larger. For example, the standard deviation of the 109 relative prices (U.S.: U.K.) used in the calculation for 1934–38 was 40% of the mean.[5]

(3) Mr. Orcutt has shown [6] that most time series analyses

[1] Tse Chun Chang, "A Statistical Note on World Demand for Exports," *Review of Economics and Statistics*, May 1948.

[2] Mr. Kubinski's method ("The Elasticity of Substitution between Sources of British Imports, 1921–38," *Yorkshire Bulletin of Economic and Social Research*, January 1950) is based on an examination of 289 commodities imported into the U.K., but the number of observations in each correlation calculation is never more than eighteen (for each of the years 1921–38).

Messrs. D. J. Morgan and W. J. Corlett ("The Influence of Price in International Trade: A Study in Method," *Journal of the Royal Statistical Society*, 1951) give the results of a few calculations with as many as forty-five observations (for the years 1870 to 1914), but the great majority of their calculations are based on less than twenty observations.

See also Orcutt, *op. cit.*, footnote 7, where it is argued that, in the time series method, the effective may be substantially less than the actual number of observations.

[3] See Orcutt, *op. cit.*, p. 121.

[4] *Oxford Studies in the Price Mechanism*, p. 95.

[5] The standard deviation of the 109 relative prices, U.K.: U.S., was 57% of the mean.

[6] *Op. cit.*, pp. 125–6.

of inter-war data can at best show the consequences of relatively small changes in prices since the range of relative price variation was small. He has also given reasons for supposing that elasticities are greater for large than they are for small price changes, mainly because of the cost and trouble to the buyer of shifting from one source of supply to another. The commodity comparison method described above shows the extent to which relative quantities may vary when there are substantial differences in relative prices (at least as between different commodities at one time).

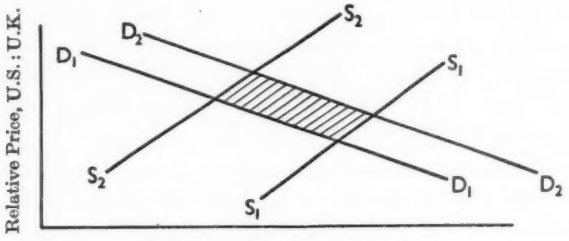
(4) According to Mr. Orcutt, the time series method may tend to give estimates of relatively short-run elasticities and underestimate the long-run elasticities. If this is so, the commodity comparison method may give a closer approximation to long-run elasticities, *i.e.*, to probable changes in relative quantities resulting from changes in relative prices if time were allowed for the consequences to work themselves out. This is, of course, an advantage only if it is desired to estimate long-run elasticities. Since the general pattern of relative export prices of British and American manufactures in our sample did not change greatly between 1934 and 1938, it may be that the regression coefficients for the later thirties give a fair idea of relatively long-run elasticities of substitution.

These apparent advantages of the commodity comparison method may justify its use, despite its limitations, at least as a complement to the time series method.[1] The last three of the four advantages just mentioned would lead one to expect higher elasticities than are obtained by the time series method. But, like the latter, the commodity comparison method may also tend to underestimate elasticities for a number of reasons. That connected with errors of observation was discussed in the last section, and there are two others that must now be explained.

[1] Mr. Orcutt has also shown (*op. cit.*, pp. 122–3) that, over time, supply and demand schedules are likely to move up and down together, and that this probably leads to an underestimate of elasticities of demand calculated from observed time series. We shall see later that, in the method described in the present article, there are schedules somewhat similar to demand and supply schedules and that these are not the same for each product, but there is no obvious reason why they should vary up and down together. This cannot, however, be counted as an advantage of the commodity comparison over the time series method, since Mr. Orcutt's criticism does not seem to apply to time series calculations using *relative* price and quantity indices. (See also footnote 1 to p. 491.)

Further Possible Bias in the Commodity Comparison Method

If we take the plunge and attempt to use the results of the commodity comparison method as some indication of what might happen to the relative demand for British and American exports of a particular product when relative prices change, we must assume that, for each product, there is a relationship between relative price and relative quantity demanded. Using our diagram measuring relative prices vertically and relative quantities horizontally on a double logarithmic scale, we have "demand substitution curves" for each product. Let us assume that these are straight lines and, for the moment, that they all have the same slope, which we wish to discover. There is, however, no reason why they should coincide. When, for example, British and American prices are equal (even after adjustment for "quality" differences) the relative quantities demanded may vary; Britain may have an advantage in one imperfect market, America in another. We thus get a series of demand substitution curves lying between D_1D_1 and D_2D_2 in the following diagram :



We can also think of "supply substitution curves" for each product, showing the relative quantities supplied at various relative prices.[1] These, likewise, are unlikely to coincide, because of differences in national factor endowments. When, for example,

[1] This is, of course, a simplification, since there may be an infinite number of pairs of prices that will give the same price ratio, and these different pairs of prices will normally lead to different ratios of quantity supplied unless the two national supply curves are related in a special way, *e.g.*, if they are parallel straight lines on a double logarithmic scale, *i.e.*, with equations of the type :

$$\log q = \log a_1 + b \log p$$
$$\log q = \log a_2 + b \log p$$

where p and q are relative price and relative quantity, and a_1, a_2 and b are constants. The two curves in this case have the same (constant) elasticity.

British and American prices are equal, Britain may supply much more of product A than the U.S., and much less of product B. We thus get a series of supply substitution curves lying between S_1S_1 and S_2S_2 which we assume for the time being to be upward sloping.

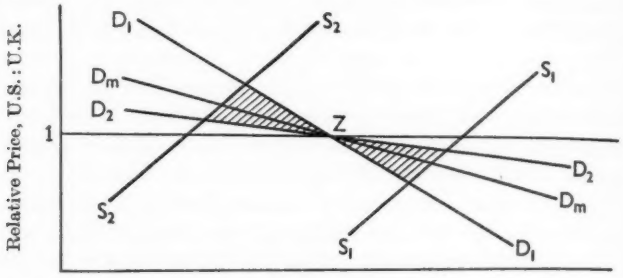
The observed points will lie at the intersection of the supply and demand substitution curves for each product, *i.e.*, within the shaded area. It is fairly clear (and this is demonstrated in Appendix B) that a regression line fitted to such points, so as to minimise the sum of the squares of the deviations in a horizontal direction, will tend to have a slope steeper than D_1D_1, and will thus underestimate the true slope of the demand substitution curves for each commodity.[1] The fact that negative rather than positive slopes are obtained for the regression lines means, presumably, that the position of the demand substitution curves varies less from product to product than the position of the supply substitution curves, *i.e.*, broadly, that differences in comparative national advantages in the imperfect markets for the various commodities have a less important effect than differences in national factor endowments on the position of the curves. This does not seem altogether unreasonable.

We must now remove the assumption that the demand substitution curves are parallel. It seems almost certain that some will be flatter than others, *e.g.*, where the market is more perfect or the product less heterogeneous. To isolate this point, let us suppose that, where British and American prices are equal, the ratio of the quantities demanded is the same for each product; *i.e.*, if either country has an advantage, it is the same in the market for each product. The various demand substitution

[1] According to our conventions the nearer the curve to the horizontal the greater the slope (see footnote 1 to p. 711 of Part I).

When a supply substitution curve is well to the right, *i.e.*, when national factor endowments are such that America supplies far more of the product than Britain at the same price, it is possible that the demand substitution curve will also tend to be well to the right, *i.e.*, that the demand for the American product will be far more than that for the British product at the same price. This might be so, because America's inevitably large share in the market has made her products better known to importers. Similarly, supply substitution curves towards the left may tend to be associated with demand substitution curves towards the left. In other words, high demand substitution curves may tend to be associated with low supply substitution curves and vice versa. If this is the case, the calculated regression line may tend to overestimate the true slope of the demand substitution curves for each commodity for reasons similar to those given by Mr. Orcutt (*op. cit.*, p. 123), where he shows that, in so far as demand and supply curves tend to move up and down together, the calculated regression line will tend to underestimate the true slope.

curves will all pass through the point Z in the following diagram :



The steepest is D_1D_1, the flattest D_2D_2, the mean slope is that of D_mD_m.[1]

The observed points will lie within the shaded area. It is fairly clear (and this is also demonstrated in Appendix B) that the regression line fitted to such points will tend to have a slope steeper than D_mD_m, and will thus underestimate the true average slope of the demand substitution curves for the various commodities.

The various demand substitution curves will, in fact, both have different slopes and cut the equal price axis at different points. The calculated slope will thus be steeper than the true average slope for both of these reasons.

This conclusion depends, however, on the assumption that the supply substitution curves slope upwards. If they are horizontal there is no bias, and if they are downward sloping the bias is in the other direction. This would necessitate downward sloping export-supply curves for individual British and American manufactures. It might be argued that, in the thirties at least, these curves did not slope appreciably upwards, since, *inter alia*, there was generally excess capacity and since exports were only a fraction of total output. For similar reasons it might be argued that the curves did not slope downwards and that, even in the long run, this would be unlikely where exports were not a large part of total output. The reader may make his private guess, but, for the purpose of this article, it seems safer to make no adjustment to our figures for the possible bias just discussed.

[1] The slope of D_mD_m is the *arithmetic* mean of the individual slopes. For reasons for choosing this form of average see footnote 2 to p. 496.

"Product" and "Total" Elasticities of Substitution

A "product" elasticity of substitution of, say, −4 between British and American exports of individual manufactures would not necessarily mean, of course, that the elasticity of substitution between the two countries' total exports of manufactures was as high as −4, because of the different patterns of exports. Suppose, for example, that the total market for British and American exports together were fixed for each product, and that there were only two products, the U.K. exporting 99 yards of cloth and 1 radio, the U.S. 99 radios and 1 yard of cloth. A 1% fall in the British price for each product relative to the American would then increase the *ratio* of British to American exports of cloth by 4% (from 99 to about 103 times), but this would raise the *quantity* of Britain's cloth exports to only about 99·04 yards, while American exports fell to approximately 0·96 yards $\left(\frac{99{\cdot}04}{0{\cdot}96} = 103\right)$. Britain's exports of cloth would then rise by only 0·04% and, since the weight given to her radio exports is very small, her total volume index of exports would also rise only slightly. Similarly, America's volume index would fall only slightly, and the ratio of the two volume indices would change by only a small fraction of 1%.

To get some idea of the importance of this factor, a calculation was made, covering the 109 products mentioned above for the years 1934–38, of the change that would result in the ratio of the two countries' export-volume indices for the 109 products if there were a small uniform percentage change in the price ratio for all products caused either by a uniform change in all the prices of one country or by this combined with a different uniform change in all the prices of the other. It was assumed that the total market for each good, for U.S. and U.K. exports taken together, remained the same or changed in the same proportion. It was found that, assuming a uniform "product" elasticity of substitution for each commodity, the corresponding "total" elasticity of substitution (relating to price and volume indices) would be 0·614 times as large. Thus, if the product elasticity of substitution is taken as (*a*) −3·6 (the calculated regression coefficient), or (*b*) −4 to −4½ (allowing for bias due to errors of observation), the total elasticity would be (*a*) −2·2 or (*b*) −2·5 to −2·8.

Similar calculations can be made for other years or groups of years, or for other pairs of countries. To find the total elasticity of substitution on the assumptions stated it is necessary to

multiply the product elasticity of substitution by $\frac{\Sigma V_a B}{\Sigma V_a} + \frac{\Sigma V_b A}{\Sigma V_b}$, where V_a and V_b are the values of the two countries' exports of each product, and A and B the proportions of the market (in terms of quantity) held by each of them ($A + B = 1$). The formula may perhaps be called an index of similarity of exports. Where the pattern of exports is exactly the same in the two countries the index is unity, where the exports are entirely different it is zero. Details are given in Appendix C.

Indices of similarity were calculated for the 109 British and American exports of manufactures for each of the years 1928 to 1938. These are shown in column (2) of Table VIII, together with the results of multiplying the indices by the corresponding regression coefficients (called "product elasticities of substitution" in the table). The resulting "total elasticities of substitution" are in column (3). Apart from year-to-year fluctuations, they show a steady increase throughout the period, rising from under $1\frac{1}{2}$ at the beginning to over 2 at the end.

TABLE VIII

British and American Exports of 109 *Manufactures*

	Product elasticity of substitution.[1]	Index of similarity.	Total elasticity of substitution (1) × (2).
	(1)	(2)	(3)
1928	2·501	0·472	1·2
1929	2·601	0·572	1·5
1930	2·599	0·542	1·4
1931	2·713	0·656	1·8
1932	2·602	0·647	1·7
1933	2·826	0·683	1·9
1934	3·241	0·561	1·8
1935	2·958	0·679	2·0
1936	2·934	0·611	1·8
1937	3·128	0·701	2·2
1938	3·134	0·660	2·1
1934–38	3·624	0·614	2·2

[1] As in column (3) of Table V. Before allowing for bias due to errors of observation.

The assumption that the total market for each product remains constant, or changes in the same proportion, tends, however, to understate the total elasticity of substitution. Suppose, for example, that America had roughly the same share in the Anglo-American export market for both silk and rayon

stockings (two products that are, in fact, included separately in the calculations described above). A relative fall in all American prices would induce foreign buyers to substitute American for British silk stockings, and American for British rayon stockings. It would also, probably, induce them to substitute American silk for British rayon stockings and American rayon for British silk stockings. But there is no obvious reason why the total market for either silk or rayon stockings should increase relatively to the other. If, however, America had a larger share in one market than in the other, the matter would be different. If, for example, America had the bulk of the market for silk stockings, and Britain the bulk of the market for rayon stockings, there would be much more scope for substitution of American silk for British rayon stockings than for the substitution of American rayon for British silk stockings, since exports of both these last two products would be small. It seems likely, therefore, that the total market for silk stockings (America's speciality) would increase in relation to the total market for rayon stockings (Britain's speciality). The increase in America's total exports relative to Britain's would then be greater than it would have been had the total silk-stocking market not expanded in relation to the total market for rayon stockings. This means that the total elasticity of substitution will tend to be a greater fraction of the product elasticity than that given by the formula described above.

This formula showed that if, as had been suggested earlier, the product elasticity of substitution were -4 to $-4\frac{1}{2}$, the total elasticity would be $-2{\cdot}5$ to $-2{\cdot}8$. After what has just been said, we may perhaps hazard a guess that the total elasticity might be of an order approaching -3.[1] This is about ten times as high as the figure of $-0{\cdot}3$ obtained by Mr. Chang for the pre-

[1] It is perhaps not necessary to remind the reader that we are talking of elasticity of substitution and that this may differ from the elasticity of demand for British or American exports. If we assume that the world import market for manufactures and the prices charged by our competitors remain constant, a given elasticity of substitution between British and *all other* exports of manufactures would mean an elasticity of demand for British exports four-fifths as great, since Britain supplied about one-fifth of the world's exports of manufactures before the war. The elasticity of demand would, however, be greater in so far as the world import market for manufactures was increased as a result of lower British prices, British manufactures being substituted both for manufactures produced in importing countries and for non-manufactures. Any changes in the definition of elasticity of demand so as to allow, for example, for price reactions by our competitors or for income changes would give correspondingly different results.

war elasticity of substitution between British and American exports of manufactures.[1]

The assumptions are, of course, still unrealistic. Allowance should be made for elasticities of demand by third countries for the exports of America and Britain together that vary from product to product; this also would lead to varying changes in the size of the total markets. Allowance should also be made for product elasticities of substitution that vary from product to product,[2] for varying changes in price according to elasticity of supply and so on. Further adjustments of this kind might tend to increase or to decrease the value of the total elasticity, but the author has been unable to think of any obvious reasons for such bias.

Changes over Time

The calculations described so far have all referred to one year or to an average of years. Some calculations have also been made for changes over time using the figures obtained for the 109 products. These may be of some use in attempting to assess short-run elasticities of substitution in particular periods. Suppose, for example, we wish to examine the effects on relative quantities of British and American exports of the large changes in relative prices that took place after Britain left the gold standard in September 1931. The published price and volume indices of exports of manufactures by themselves tell us relatively little. We find, for example, that, between 1930 and 1932, the American price index for exports of manufactures rose by 23% in relation to the British (in terms of dollars), while the American volume index fell relatively by 42%.[3] This suggests an elasticity of substitution of over $-2\frac{1}{2}$.[4] Similarly, between

[1] Chang, *op. cit.*, p. 112. Based on the years 1924–38. Mr. Chang appears to compare total U.K. exports (which were mainly manufactures and semi-manufactures) with U.S. exports of semi-manufactures and manufactured goods only. Professor A. J. Brown (*op. cit.*, p. 95) has given reasons for the low figure obtained by Mr. Chang.

[2] Some reasons are given in Appendix C for thinking that the assumption that each product elasticity of substitution is equal to the arithmetic mean of the product elasticities does not introduce any bias into the derivation of the total elasticity. This provides some justification for taking the arithmetic rather than any other mean of the product elasticities as the magnitude we wish to find. (See footnote 1 to p. 492.)

[3] Using the indices for U.S. exports of "finished manufactures" and U.K. exports of "articles wholly or mainly manufactured." These are not wholly comparable, but this does not matter, since the figures are used here for illustration only.

[4] $\frac{\log 0{\cdot}58}{\log 1{\cdot}23} = \frac{-0{\cdot}2366}{0{\cdot}0899} = -2{\cdot}63.$

1932 and 1934, America's price index fell relatively by 27%, while her volume index rose relatively by 23%; this suggests an elasticity of substitution of only $-\frac{2}{3}$.[1] But it would be rash to rely on single observations of this type. We have reason to think, moreover, that American exports of manufactures are more sensitive than the British to cyclical fluctuations, since they contain a higher proportion of capital goods and of durable consumer goods for which the income elasticity of demand is high. This may account for part of the relative fall in American exports between 1930 and 1932, when activity was rapidly declining throughout the world. Then again, there might have been changes, between 1932 and 1934, in the imperfection of the world market that worked to the disadvantage of U.S. exports, for example, the Ottawa Agreements and the general spread of discriminatory practices. This might account in part for the comparatively small relative rise in American exports between 1932 and 1934.

More useful results may perhaps be obtained if we examine changes in individual products. A comparison was therefore made of changes, (*a*) between 1930 and 1932 and (*b*) between 1932 and 1934, in the relative quantities and relative prices of the 109 products mentioned above. In this way we can obtain 109 observations of short-period changes instead of only one (and there is also a substantial range of variation in relative prices). We can largely eliminate the complications that arise from the different patterns of British and American exports of manufactures, except in so far as there are differences within the commodity classifications used. We can isolate, in a general way, the effects of changes in the imperfections of the world market that work to the disadvantage of one country. Thus, in comparing 1932 and 1934, we plot the relative price index for each product in 1934 (1932 = 1) against the relative quantity index on a double logarithmic scale. The regression line cuts the horizontal axis, indicating no change in relative price, at a point where the relative quantity index is 0·72 (*A* in Fig. 3). This suggests that, where the relative price of a commodity remained unchanged between 1932 and 1934, there was a fall of 28% in the American quantity relative to the British quantity. This may give some indication of the extent to which imperfections of the markets changed to the disadvantage of the U.S.;[2]

[1] $\frac{\log 1{\cdot}23}{\log 0{\cdot}73} = \frac{0{\cdot}0899}{-0{\cdot}1367} = -0{\cdot}66.$

[2] In the case of nearly one-third of the 109 products, the American relative quantity fell despite a fall in the American relative price.

although the later analysis (pp. 500 *et seq.* and Appendix D) shows the need for caution in drawing such a conclusion. The correlation coefficient is −0·62, and the slope of the regression line is −2·0. This suggests that, after allowing for the shift to America's disadvantage, a change of 1% in relative price of a product was accompanied by a change of 2% in relative quantity; in other words, that the product elasticity of substitution was −2.[1] A similar calculation for 1930–32 gave a correlation coefficient of −0·57 and an elasticity of −1·5.

Changes in Relative Prices and Quantities of U.S. and U.K. Exports of 109 *Manufactures* 1932–34

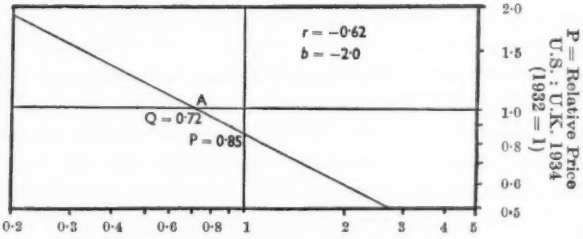


FIG. 3

These elasticities are considerably lower than those obtained by the other method, before allowing for downward bias. This may be partly because they can only show the comparatively short-run consequences of changes in relative prices, whereas the other method may give a better idea of long-run consequences. Even, however, when similar comparisons were made of changes over longer periods, relatively low figures were obtained. Thus, a comparison of 1929 and 1937, again for the 109 commodities, gave a correlation coefficient of only −0·45 and an elasticity of −1·8. A comparison of the four years 1928–31 against the five years 1934–38 gave a correlation coefficient of −0·48 and an elasticity of −1·7. These lower elasticities cannot be explained by the difference between long-run and short-run elasticities, unless it is thought that more than eight years are required for the full effects of price changes to be felt. It may be that they are biased towards zero more than the results of the earlier calculations, one important reason being that the range of varia-

[1] The equation of the regression line is :

$$\log q = -2{\cdot}0 \log p + \log 0{\cdot}72,$$

where q and p are indices of relative quantity and price (1934 : 1932)

tion in relative prices is much smaller. In general, one is hardly surprised to find rather a poor relation between relative price and relative quantity changes over a period of eight years, since so many things have happened, other than price changes, to affect the relative quantities demanded. The implications of the type of analysis just described probably deserve further examination, but this is not attempted here, as the present article is concerned primarily with the cross-section type of analysis.

Conclusions on Elasticity of Substitution

This concludes the discussion of elasticity of substitution.[1] It cannot be too strongly emphasised that any numerical results that may be obtained by this or by other methods cannot be used to make precise forecasts. It is, however, useful to gather together all evidence that may provide some background for those who have to make forecasts and decisions, to consider as carefully as possible what the evidence means and what it does not mean, to examine possible biases and so on. Practical judgments about, for example, the effects of exchange-rate variations or the degree of difficulty involved in restoring international equilibrium do not depend upon a knowledge of whether elasticities of substitution are, say, −2·3 or −2·7, but they do require a knowledge of whether they are of the order of −0·03, or −0·3, or −3 or −30. Such judgments also, of course, require a knowledge of, or at least a view on, many other things (which will vary from time to time), such as the flexibility of supply, the reactions of producers and of their governments to changes in the prices charged by their competitors, the extent to which demand for the goods of competing nations is determined by supply of currency, speed of delivery, etc., rather than by price, and so on. Practical judgments of this type inevitably involve an act of faith; no one can work out the full implications on the world economy of an important change in the economic policy of a major country; no one can foretell the actions and reactions of millions of producers and consumers and of governments throughout the world. But this does not render futile the attempt to establish the likely order of magnitude of, for example, the elasticity of substitution between the exports of various countries, nor does it rob such a concept of all meaning.

[1] Another type of analysis of the figures for the 109 products would be the correlation, for each product, of relative prices and relative quantities in the eleven years 1928–38, *i.e.*, 109 correlations with eleven observations each. This analysis, which would be similar to that made by Mr. Kubinski for imports into the U.K., has not been attempted.

This paper has suggested one method by which some relevant evidence can be collected and applied it to the particular case of American and British exports of manufactures, mainly in the years between the wars. There are doubtless difficulties involved in the method described other than those mentioned in this paper, and it is hoped that these will be explored by others. But it does seem fairly clear that there was some inverse relation between relative price and relative quantity and that variations in the former were associated with comparatively large variations in the latter. While it is dangerous to apply the results obtained to future changes, I believe that the evidence gives some grounds for thinking that, at least in conditions resembling those of the later thirties (an important proviso), changes in the relative prices of British and American exports of manufactures should lead to comparatively large changes in the relative quantities demanded in third markets, at least after a period of years.

D. Exports and Factors other than Price

Apparent American Disadvantage in the Imperfect World Market

It will have been noticed that, according to the regression line in Fig. 2,[1] which referred to the years 1934–38, the U.S. tended to export little more than half as much of a commodity as Britain when she charged the same price and that she exported as much only when her price was 16% below the British. As Table IX shows, this was rather typical of the individual years 1933–38. When prices were equal, the U.S. tended to export between one-half and two-thirds as much as Britain and exported as much only when her price was 10–20% lower. For the earlier years, 1928–32, the regression lines show the U.S. in a more favourable relative position; when prices were equal she tended to export roughly 80–90% as much as Britain, and she sold as much when her price was some 5–10% lower. For the years before 1928, allowing for lack of comparability, the figures tell roughly the same story, at least from 1924 onwards. (The results for 1948 show a striking improvement in the relative position of the U.S. compared with 1937 and, though the comparison is dangerous, there seems to have been a similar improvement between 1913 and the early 1920s.)

The figures for the years between the wars suggest that, in the period 1933–38 and, to a lesser extent, between 1924 and 1932, the U.S. had, on balance, a comparative disadvantage in the imperfect world market as the result of such factors as Imperial

[1] In Part I.

Preference, discrimination against dollar goods, differences in transport costs, stronger commercial ties between Britain and overseas markets, greater selling efforts by British exporters, etc. But before jumping to this conclusion we must consider other possible reasons for the low figures in Table IX.

TABLE IX

Particular Values shown by Regression Lines

	No. of manufactures.	Relative quantity (U.S. : U.K.) when price equal.	Relative price (U.S. : U.K.) when quantity equal.
	(1)	(2)	(3)
1913 [1]	32	0·48	0·80
1922	86	1·01	1·01
1923	86	0·95	0·97
1924	86	0·82	0·90
1925	86	0·87	0·94
1925	97	0·81	0·91
1926	97	0·83	0·92
1927	97	0·78	0·90
1928	97	0·85	0·93
1928	109	0·90	0·96
1929	109	0·87	0·95
1930	109	0·79	0·91
1931	109	0·86	0·94
1932	109	0·84	0·93
1933	109	0·57	0·82
1934	109	0·51	0·81
1935	109	0·69	0·88
1936	109	0·59	0·83
1937	109	0·67	0·88
1938	109	0·61	0·85
1934–38	109	0·53	0·84
1937	118	0·50	0·79
1948	118	1·10	1·06
Commonwealth countries 1937	115	0·22	0·54
Non-Commonwealth countries 1937	115	1·36	1·16

[1] Mid-1912 to mid-1913 for U.S.

(1) One possible explanation is that different methods of valuing exports in the two countries led to an artificial relative under-valuation of American exports. If this was so, regression lines based on the corrected figures would be above the lines we have obtained. They would show the U.S. exporting a higher fraction of the British quantity when prices were equal. There are two obvious corrections

that should be made. First, U.S. exports are relatively under-valued because freight charges up to the Canadian border are not included in the recorded value of certain exports to Canada. This under-valuation probably represented about 1% of the value of U.S. exports to all countries before the war,[1] but may have been a smaller percentage of the value of manufactured exports, which tend to have a relatively high value per ton. Secondly, U.S. exports are in general valued f.a.s. (free along side), while U.K. exports are valued f.o.b. (free on board), the difference being the cost of loading. It is unlikely that this normally involved a difference of more than 1% of the value of manufactured exports. It is hard to discover any other important reason for American under-valuation, but the possibility should not be ruled out.

(2) A second possibility is that British exports were, on average, of a higher quality than the American, and that appropriate corrections would therefore raise the regression line.[2] This is a matter on which it is difficult to express an opinion.

(3) It has been shown above that the true average slopes of the lines are probably flatter than the calculated slopes because of errors of observation (other than a general tendency for the quality of one country's exports to be higher) and possibly for other reasons. The true regression lines would probably cut the equal-price and equal-quantity lines at different points, and this might reduce or eliminate the apparent American disadvantage. (This is discussed in Appendix D.)

For these reasons it seems unwise to conclude from the figures that, at least before 1933, the U.S. had a comparative disadvantage in the imperfect world market. For the later pre-war years the presumption is stronger that this was the case, even allowing for possible errors. According to the regression line for the years 1934–38, the U.S. exported as much as the U.K. when her price was 84% of the British. It is hard to make allowance for the errors under (3) above, but it is suggested

[1] *Balance of International Payments of U.S.* (Department of Commerce). It is pointed out in *Foreign Commerce and Navigation of the United States* for 1946 that similar inaccuracies may occur in connection with ocean shipments.

[2] The correction would shift the observed points, on a double logarithmic scale, upwards and to the left at an angle of 45° to the horizontal. Since the regression lines obtained all have a slope flatter than −1, they would clearly be shifted upwards.

in Appendix D that this might well raise the figure to 86½%. A 2% allowance for under-valuation of U.S. exports (as in (1) above) would raise the figure farther to 88%. Thus we are left with a price margin of some 12%. If this cannot be explained by a higher average British quality ((2) above) and by immeasurable errors under (1) and (3) above, we may conclude that the U.S. had a comparative disadvantage in the later period.

That this was so is suggested in a more simple manner by the figures in columns (2) and (3) of Table X. These are, in fact, unweighted quantity and price index numbers for the products

TABLE X

Geometric Means and Medians

	No. of manufactures.	Unweighted geometric means.		Medians.	
		Relative quantity (U.S. : U.K.).	Relative price (U.S. : U.K.).	Relative quantity (U.S. : U.K.).	Relative price (U.S. : U.K.).
	(1)	(2)	(3)	(4)	(5)
1913 [1]	32	0·69	0·90	0·55	0·89
1922	86	1·42	0·84	1·075	0·88
1923	86	1·14	0·90	1·04	0·94
1924	86	0·88	0·96	0·85	1·035
1925	86	1·03	0·93	0·89	0·98
1925	97	1·02	0·90	0·89	0·95
1926	97	1·00	0·92	0·99	0·98
1927	97	0·98	0·91	0·85	0·98
1928	97	1·05	0·92	1·01	0·99
1928	109	1·18	0·90	1·17	0·96
1929	109	1·13	0·90	1·10	0·96
1930	109	1·07	0·89	0·92	0·925
1931	109	0·94	0·97	0·98	0·99
1932	109	0·56	1·17	0·56	1·17
1933	109	0·57	1·00	0·45	1·03
1934	109	0·62	0·94	0·59	0·995
1935	109	0·59	1·05	0·50	1·02
1936	109	0·64	0·97	0·55	1·02
1937	109	0·76	0·96	0·58	0·99
1938	109	0·78	0·92	0·63	0·95
1934–38	109	0·69	0·93	0·58	1·00
1937	118	0·65	0·91	0·58	0·97
1948	118	1·37	0·87	1·33	0·91
Commonwealth countries 1937	115	0·235	0·97	0·24	0·96
Non-Commonwealth countries 1937	115	1·61	0·92	1·53	0·95

[1] Mid-1912 to mid-1913 for the U.S.

in our sample. But, instead of comparing one year with another, they show for each year, or period of years, indices for the U.S., the U.K. being taken as unity. For the years 1934–38 taken as a whole, the recorded U.S. price was, on average, 93% of the British, but the U.S., instead of exporting more than Britain, as might have been expected, exported, on average, only 69%

as much.[1] If we assumed that a 2% correction is adequate for under-valuation of U.S. exports ((1) above) this would raise the 93% to 95%; the general picture would not be materially altered. If we further assumed that British products were as much as, say, 10% better in quality than the American, this would further raise the average U.S. price to around 105% of the British, but it would also reduce the average U.S. quantity to around 63% of the British. Such a low American export could be explained by 5% higher prices only if there were an elasticity of substitution of more than -9,[2] and this seems improbable.

If median relative quantities and prices are used (columns (4) and (5) of Table X), the result is less convincing, but, despite all the uncertainties, it seems not unlikely that, in the later thirties, the U.S. tended to export less of a commodity than Britain when the price was equal. It also seems likely that, in the earlier years, any American comparative disadvantage in the imperfect world market was smaller or non-existent. These tentative conclusions may not, however, apply to the whole range of manufactures; it should be remembered in particular that, for statistical reasons, the products in our sample include very few in the important field of machinery.

The figures in Table X confirm the striking improvement in the relative position of the U.S. between 1937 and 1948, though it is not easy to assess the relative importance of various possible causes. While British exporters were out of the market during

[1] These are geometric means. The arithmetic means are, of course, larger, and the harmonic means (*i.e.*, the reciprocals of the arithmetic means of relative price and quantity, U.K. : U.S. instead of U.S. : U.K.) are smaller. The various means are as follows :

	Arithmetic.	Geometric.	Harmonic.
Relative quantity, U.S. : U.K. .	4·75	0·69	0·03
Relative price, U.S. : U.K. . .	1·03	0·93	0·86

The arithmetic and harmonic means of relative *quantity* are greatly influenced by a few extreme cases which have a much smaller effect on the geometric mean. Nevertheless, the large difference between the arithmetic and harmonic means shows the need for caution in the use of the geometric mean. The differences between the various means of relative *price* are much less marked because the range of variation is much smaller in relative price than it is in relative quantity.

As a form of check on the geometric means, the medians were also calculated and these are shown in columns (4) and (5) of Table X. The general picture is not very different, and the use of medians instead of geometric means does not greatly affect the arguments in the text.

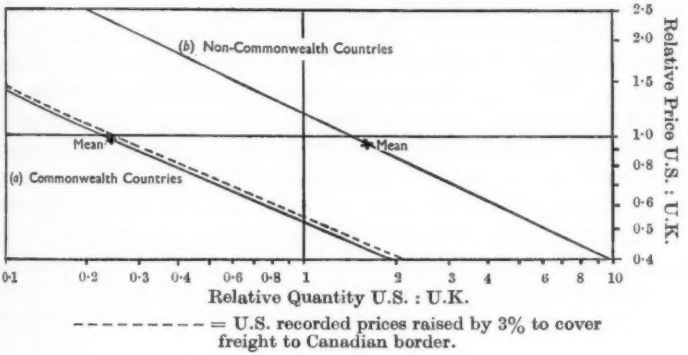
[2] $\frac{\log 0{\cdot}63}{\log 1{\cdot}05} = -9{\cdot}5.$

the war and early post-war years, American manufacturers doubtless built up goodwill and a preference for American models and qualities, and at the same time gained a lead in the development of new types of products. They were handicapped after the War by discrimination caused by dollar shortage, but this was limited by U.S. government loans and grants. On the other hand, the large change in the figures may reflect in part merely the inability of British exporters, in 1948, to meet demand at a given price.

Imperial Preference

It is tempting to try to discover how far the apparent disadvantage of the U.S. in the imperfect world market in the later thirties can be accounted for by Imperial Preference and how far the increase in preferences resulting from the Ottawa Agree-

Relative Prices and Quantities of U.S. and U.K. Exports of 115 *Manufactures in* 1937 *:*
(*a*) *to Commonwealth Countries*
(*b*) *to Non-Commonwealth Countries*



– – – – – – – – – = U.S. recorded prices raised by 3% to cover freight to Canadian border.

FIG. 4

ments accounts for the apparent change to America's disadvantage after 1932. It is shown in Appendix E that, after Ottawa, the margin of preference on U.K. goods entering British Commonwealth markets was, on average, of the order of 10%, so that, as roughly one-half of British exports went to Commonwealth countries, the margin represented about 5% of the total value of British exports. The increase in the margin resulting from the Ottawa Agreements must have been considerably less than 5%. The reader may care to make his private deductions about the effects of Imperial Preference, but, in view of the difficulties described above, it does not seem that trustworthy conclusions can be drawn from the figures so far given.

A more fruitful approach is to consider separately British and American exports (*a*) to Commonwealth countries (excluding the U.K.) and (*b*) to non-Commonwealth countries (excluding the U.S.). This has been done, for 115 commodities, for the year 1937.[1] Owing to the labour involved, similar calculations were not made for other years. The two regression lines are shown in Fig. 4, and the main results are given in Tables IX and X.

It will be seen from Table X that American prices were, on average, 92% of the British for exports to non-Commonwealth countries and 97% for exports to the Commonwealth.[2] This latter figure should perhaps be raised to about 100% to cover under-valuation of U.S. exports to Canada.[3] Other possible corrections for relative under-valuation or quality differences need not concern us here, since they would probably apply in more or less equal degree to exports both to Commonwealth and to non-Commonwealth countries. We are concerned only with the fact that average relative prices were some 8% lower in trade with non-Commonwealth countries than they were in trade with the Commonwealth. There was, on the other hand, a very large difference in relative quantities. The U.S. exported, on average, 161% as much to non-Commonwealth countries as Britain and only 23½% as much as Britain to Commonwealth countries. In case these figures are biased by quality differences, it is safer to say that the relative quantities (U.S. : U.K.) were, on average, about 6·9 times as great for non-Commonwealth countries as they were for Commonwealth countries.[4] Such a large difference could be explained by the 8% difference in relative prices only if we assumed an "elasticity of substitution" as high as −23.[5] This is unlikely, and it therefore seems almost

[1] For statistical reasons, it was impossible to obtain figures for the 171 or for the 109 commodities covered by the previous analyses.

[2] The geometric means are used in this paragraph and the next, but the argument is unaffected if the medians are used instead.

[3] Railway freight to the Canadian frontier not included in the recorded value of U.S. exports has been estimated at $34 million in 1937 (*The Balance of International Payments of the United States in 1937*, p. 28). This is 4% of U.S. exports to the British Commonwealth (excluding the U.K.), which totalled $827 million. Since the percentage for manufactures may have been smaller, and since there may have been offsetting factors, it seems reasonable to round up our observed figure of 97% to 100%.

[4] A comparison of the values of British and American exports of all manufactures to Commonwealth and non-Commonwealth countries shows a much smaller discrepancy.

[5] $\frac{\log 6{\cdot}9}{\log 0{\cdot}92} = -23.$

This is a sort of "spatial" elasticity of substitution. Questions of bias are not discussed, as the figure is purely illustrative.

certain that a large part of the difference is to be explained by factors other than price.

Of these, Imperial Preference seems to provide only a partial explanation. The margin of preference was about 10% of the value of British exports to the Commonwealth, so that if, as the figures suggest, the prices of British and American exports to the Commonwealth were, on average, the same excluding import duty, then American prices, including duty, were some 110% of the British. In non-Commonwealth countries they were 92% of the British, *i.e.*, relative prices (U.S. : U.K.) were about 16% lower in non-Commonwealth countries than they were in Commonwealth countries.[1] But, even allowing for this, the large difference in relative quantities could be explained solely by prices, including duty, only if we assumed an elasticity of substitution of at least −11.[2] It therefore seems likely that factors other than preferential duties were important.

An examination of the two regression lines may give some indication of the relative importance of Imperial Preference and other factors. It will be seen from Fig. 4 that the line for Commonwealth countries was far to the left of that for non-Commonwealth countries. Whatever corrections may be necessary,

[1] $0{\cdot}92 \div 1{\cdot}10 = 0{\cdot}84$. It is assumed that the rate of duty on British and American goods in non-Commonwealth markets was the same. See also next footnote.

[2] $\dfrac{\log 6{\cdot}9}{\log 0{\cdot}84} = -11.$

This is an understatement for two reasons :

(*a*) Where duties are *ad valorem*, relative prices to Commonwealth countries, including duty (but excluding transport costs, the difference in which is small for most manufactures), would be :

$$\frac{1 + t_c + t_a}{1 + t_c} = 1 + \frac{t_a}{1 + t_c}$$

where t_c is the rate of common tariff and t_a the rate of additional duty on U.S. goods. Where t_a is 0·1 (10%), the relative price is thus less than 1·1, where t_c is not zero. Where duties are specific, relative prices, including duty, would be :

$$\frac{p + T_c + T_a}{p + T_c} = \frac{1 + \dfrac{T_c}{p} + \dfrac{T_a}{p}}{1 + \dfrac{T_c}{p}}$$

where T_c and T_a are the common and additional specific duties and p the American and British price. Where $\dfrac{T_a}{p} = 0{\cdot}1$ this will again be less than 1·1.

(*b*) Relative prices of exports to non-Commonwealth countries, including duty, would be greater than 92% in so far as there are specific duties.

Relative prices to non-Commonwealth countries would thus be less than 16% lower than relative prices to Commonwealth countries, and the elasticity of substitution required to explain the difference in relative quantity would be higher than −11.

this seems to indicate a substantial difference in the relative advantages of America and Britain in these two markets at a given f.o.b. price ratio. According to the regression lines, U.S. exports to non-Commonwealth countries were 136% of the British when recorded prices were equal while her exports to the Commonwealth were only 22% of the British. It is suggested in Appendix D that, even allowing for corrections, it may still be fairly safe to say that, where British and American prices were equal in both markets, relative exports (U.S. : U.K.) were four times as great for non-Commonwealth as for Commonwealth countries.[1]

Now the margin of Imperial Preference was about 10% of the value of British exports to Commonwealth countries. Where British and American prices in Commonwealth markets were equal, including duty, the American price, excluding duty, was, therefore, on average, 9% less than the British price, excluding duty.[2] Assuming a product elasticity of substitution as high as −5, the relative quantity (U.S. : U.K.) was about 60% higher when prices were equal, including duty, than it was when prices were equal excluding duty.[3] If, therefore, the relative quantities were about four times as great in non-Commonwealth markets as they were in Commonwealth markets when prices, excluding duty, were equal, they were still about $\frac{4}{1{\cdot}6} = 2\frac{1}{2}$ times as great when prices, including duty, were equal. There is thus still a margin of this order to be explained by factors other than Imperial Preference. The latter, in fact, explains directly only a comparatively small part of the relative advantage of the U.K. in Commonwealth as compared with non-Commonwealth markets.

[1] According to the regression lines the U.S. exported the same amount as Britain to non-Commonwealth countries even when her price was 116% of the British, but the same amount to Commonwealth countries only when her price was 54% of the British. It is argued in Appendix D that the last figure may well be too low and the first too high.

[2] When duties are *ad valorem*, and prices are equal, including duty :

$$p_a(1 + t_c + t_a) = p_b(1 + t_c)$$

where p_a, p_b are the American and British prices, excluding duty, t_c the common rate of tariff and t_a the additional rate on U.S. goods (transport costs are ignored). *I.e.*,

$$\frac{p_a}{p_b} = \frac{1 + t_c}{1 + t_c + t_a} = \frac{1 + t_c}{1{\cdot}1 + t_c}$$

which is greater than $\frac{1}{1{\cdot}1}$, *i.e.*, greater than 0·91. In so far as the true figure exceeds 0·91, the argument in the text is strengthened.

[3] Antilog (−5 log 0·91) = 1·6.

It would seem that factors such as commercial ties of Britain with the Commonwealth and of the U.S. with certain non-Commonwealth countries were considerably more important; although Britain's ties with the Commonwealth may, in part, have been indirectly fostered by the preferential duties. If the elasticity of substitution was less than −5, the importance of preferential duties was, of course, smaller.

It is interesting to speculate about the effect of preferential duties on the volume of Britain's export trade. Before the war, Commonwealth countries probably took around 37–38% of their imports of manufactures from Britain,[1] *i.e.*, the ratio of British to foreign exports of manufactures to Commonwealth countries was about 0·6.[2] If the preferences had been removed and prices, excluding duty, had remained the same, the ratio of British to foreign prices, including duty, would have risen by something like 10%. Assuming a *total* elasticity of substitution of −3 (the highest figure we dared to suggest for the *total* elasticity between British and U.S. exports of manufactures to all countries) the ratio of 0·6 would have fallen by about one-quarter,[3] *i.e.*, to 0·45, so that Britain's proportionate share would have fallen from about 37½% to about 31%.[4] If the total market had remained the same, the quantity of Britain's exports to Commonwealth countries would thus have fallen in the ratio $37\frac{1}{2} : 31$, *i.e.*, by about 17%, and, if her trade with other countries had been unaffected, her exports to all countries would have fallen by about 9%. Assuming a total elasticity of substitution of −2, the figure would be about 6%. In view, however, of the many indirect repercussions and of the danger, emphasised above, of using calculated elasticities, too much significance should not be attached to these results, which suggest that preferential duties safeguarded less than 10% of Britain's total exports.[5] It should be remembered, too, that they take no account of other preferential arrangements such as preferential import quotas.

[1] This is a rough calculation based on value; it is assumed that the figure for volume is the same.

[2] $\frac{37\frac{1}{2}}{63\frac{1}{2}} = 0{\cdot}6$.

[3] $-3 \log 1{\cdot}1 = -0{\cdot}1242$, the antilog of which is 0·75.

[4] $\frac{31}{69} = 0{\cdot}45$.

[5] This is not, of course, the same as the percentage of U.K. exports enjoying preference, which was considerably higher. Table XI shows that more than one-half of U.K. exports to Commonwealth countries enjoyed preference, *i.e.*, over one-quarter of all U.K. exports.

E. General Conclusions

The studies described in this article (including Part I which appeared in the Economic Journal for December 1951) have ranged over a rather wide field; one thing led to another. It is hoped that they have illustrated, among other things, the usefulness of tackling problems of international trade through a study of individual commodities. The article is intended to be partly a study of method, but some of the results may be of more general interest.

It seems that the labour theory of value, crude as it is, does help to provide some explanation of British and American export trade in manufactures in an imperfect world market and to illustrate the importance of tariffs in limiting international commerce. It reminds us that a country can compete in certain lines, even with a rival whose general level of productivity is much higher. (This does not, of course, mean that a high and rapidly rising level of productivity in, say, the U.S. may not aggravate the problem of international disequilibrium. For example, knowledge of the high American standard of living may increase any tendency of other countries to try to live beyond their means; high productivity, reflected partly in the ability to supply the latest products, creates a large demand for a country's exports; a more rapid growth of productivity than in other countries may mean continuous pressure on the international exchanges unless money wages also increase at an abnormally high rate; and so on.)

The fact that American weekly wages in manufacturing, which were about twice the British before the war, are now about $3\frac{1}{2}$ times as high suggests that, despite changes in relative productivity, there may be important opportunities for British exporters in many new lines. Figures in Tables IX and X, however, are consistent with the common view that the war resulted in a substantial improvement in the relative position of the U.S. in the imperfect world market. Some allowance must be made for this fact in any estimate of British export prospects unless it is offset by special selling efforts by British exporters, by discrimination against American goods or in other ways.

Leaving labour costs and turning to prices, a similar picture emerged. There was a fairly clear inverse relation between relative prices of British and American exports and the relative quantities exported, variations in the former being associated with comparatively large variations in the latter. The range

of relative prices showed, incidentally, the doubtful value of such statements as: "before devaluation . . . British goods had been 25% higher in price than American."[1] It seems likely that some British prices are usually higher than the American, some lower. The important question is how many are higher, how many lower, and by how much. Even if British and American prices were, according to some form of average, equal, this would not necessarily result in international equilibrium.

The results obtained suggested a possible method of estimating the elasticity of substitution between the exports of two countries by using data for a number of commodities in one period instead of data for one commodity (or group of commodities) in a number of periods. Although open to certain objections, this approach seems to avoid some of the difficulties connected with the more normal time series method.

A method was also suggested of using the "product" elasticity of substitution so obtained to estimate the "total" elasticity of substitution between groups of exports, which will normally be a lower figure. The calculations, allowing for possible bias, suggested a very much higher elasticity of substitution between British and American exports of manufactures than that obtained by Mr. Chang. An alternative method was also suggested of estimating short-period elasticities at particular times of rapid change.

Finally, the data for individual products were used in an attempt to estimate the importance of factors other than price in determining relative exports. The tentative conclusion was reached that, in the later thirties, the U.S. had on balance a comparative disadvantage in the imperfect world market, at least in the products studied. There was, however, a striking difference between Commonwealth and non-Commonwealth markets, the U.S. having a substantial disadvantage in the former and a substantial advantage in the latter. It seemed unlikely that more than a small part of this difference could be directly attributed to Imperial Preference, leaving the major part to be explained by commercial ties and other non-price factors. The importance of such factors in determining relative shares in export markets is not, however, inconsistent with a high price elasticity of substitution. A purchaser may be prepared to buy from A rather than B, even though A's price is, say, 5% higher; but if the margin rises to, say, 7% or 8% he may quickly switch the bulk of his custom to B.

[1] *The Times*, September 23, 1949.

It is hoped that the validity of the methods suggested in this article will be examined by others and that they may possibly be of some use in the study of other problems of international trade.

G. D. A. MacDougall

Nuffield College,
Oxford.

Appendix B

Other Possible Bias in the Calculated Slopes of the Regression Lines

Let the true demand substitution curve for product R be

$$X_1 = A_r + B_r X_2 \quad . \quad . \quad . \quad . \quad . \quad (1)$$

where X_1 and X_2 are the logarithms of relative quantity and relative price respectively. (It is assumed in this Appendix that there are no errors of observation.) A_r and B_r are not the same for each product. For product R, B_r is the slope of the demand substitution curve, A_r the value of X_1 when $X_2 = 0$, *i.e.*, the logarithm of the relative quantity when the British and American prices are equal.

Equation (1) may be re-written

$$(x_1 + \overline{X}_1) = (a_r + \overline{A}) + (b_r + \overline{B})(x_2 + \overline{X}_2) \quad . \quad (2)$$

where $\overline{X}_1$, $\overline{X}_2$, $\overline{A}$ and $\overline{B}$ are means and x_1, x_2, a_r, b_r deviations from them.

i.e., $$x_1 = \overline{B}x_2 + a_r + b_r x_2 + \overline{X}_2 b_r + (\overline{A} - \overline{X}_1 + \overline{B}\overline{X}_2) \quad (3)$$

Multiplying through by x_2, and summing, we get

$$\Sigma x_1 x_2 = \overline{B}\Sigma {x_2}^2 + \Sigma a_r x_2 + \Sigma b_r {x_2}^2 + \overline{X}_2 \Sigma b_r x_2 \quad . \quad (4)$$

(Σx_2 multiplied by the constant expression in brackets in (3) is zero)

Let b be the regression coefficient obtained by the method of least squares from the observed data (minimising the sum of the squares of the deviations of the logarithms of relative *quantity*). Then

$$b = \frac{\Sigma x_1 x_2}{\Sigma {x_2}^2} = \overline{B} + \frac{\Sigma a_r x_2}{\Sigma {x_2}^2} + \frac{\Sigma b_r {x_2}^2}{\Sigma {x_2}^2} + \overline{X}_2 \frac{\Sigma b_r x_2}{\Sigma {x_2}^2} \quad . \quad (5)$$

The second, third and fourth terms on the right-hand side of (5) will tend to be positive if the supply substitution curves slope upwards.

The second will tend to be positive because a positive value of a_r denotes a demand substitution curve towards the right, and this will tend to mean a relatively high relative price (since the supply substitution curves slope upwards), *i.e.*, a positive value of x_2. Similarly, negative values of a_r and x_2 will tend to go together.

The third term is a weighted average of the b_r's, the weights being the ${x_2}^2$'s. A positive b_r denotes a steeper than average slope, and it is with these commodities that the large ${x_2}^2$'s will tend to be found, since a large ${x_2}^2$ denotes a relative price which is well below, or well above, the mean. Similarly, a negative b_r will tend to be associated with a small ${x_2}^2$. Thus, while the unweighted average of the b_r's is zero, the weighted average will tend to be positive.

The fourth term will tend to be positive for the following reasons. When $\bar{X}_2 > 0$, *i.e.*, broadly, when the majority of the relative prices are greater than unity, a positive b_r (*i.e.*, a steeper than average slope) will tend to mean a positive x_2 (*i.e.*, a higher than average relative price) and $\Sigma b_r x_2$ will tend to be positive. The fourth term will thus tend to be positive. When $\bar{X}_2 < 0$, a positive b_r will tend to be associated with a negative x_2, and $\Sigma b_r x_2$ will tend to be negative. Again, the fourth term will tend to be positive.

Thus, from (5), b will tend to be greater than $\bar{B}$, *i.e.*, the calculated slope will tend to be steeper than the mean of the true slopes of the demand substitution curves if (i) the true curves are parallel but not coincident, or (ii) the true curves are not parallel but all cross the equal price line at the same point, or (iii) the true curves are not parallel and do not cross the equal price line at the same point.

If, however, the supply substitution curves are horizontal, it will readily be seen that these sources of bias disappear, and if they are downward sloping the bias is in the other direction.

Appendix C

Relation between the "Product" and the "Total" Elasticities of Substitution

(on the assumptions given on p. 493.)

If the quantitative *shares* of America and Britain in the exports of a commodity are A and B respectively ($A + B = 1$),

the ratio of a small proportionate change in A to an accompanying small proportionate change in $\frac{A}{B}$ will be

$$\frac{\frac{A}{B}}{A} \cdot \frac{dA}{d\left(\frac{A}{B}\right)} = \frac{1}{1-A} \cdot \frac{dA}{d\left(\frac{A}{1-A}\right)} = \frac{1}{1-A} \cdot (1-A)^2 \,{}^{1} = 1 - A = B.$$

If, therefore, there is a small proportionate change K in the *ratio* of America's to Britain's exports of each commodity, there will be a proportionate change of KB_n in America's *share* in the total market for British and American exports of commodity n. If that total market changes in the ratio $1 : (1 + L)$ for each commodity, the *quantity* of America's exports of commodity n will change in the ratio $1 : (1 + KB_n)(1 + L)$. It can be shown, similarly, that the quantity of British exports will change in the ratio $1 : (1 - KA_n)(1 + L)$.

The *volume indices* of American and British exports will then change in the ratios of, respectively [2]

$$1 : \frac{(1+L)\Sigma V_a(1+KB)}{\Sigma V_a} \quad \text{and} \quad 1 : \frac{(1+L)\Sigma V_b(1-KA)}{\Sigma V_b}$$

where V_a and V_b are the values of America's and Britain's exports of each commodity.

The proportionate change in the ratio of the American to the British volume index will be

$$\frac{\Sigma V_b \Sigma V_a(1+KB)}{\Sigma V_a \Sigma V_b(1-KA)} - 1 \quad . \quad . \quad . \quad . \quad . \quad (1)$$

$$= K\frac{[\Sigma V_b \Sigma V_a B + \Sigma V_a \Sigma V_b A]}{\Sigma V_a \Sigma V_b - K\Sigma V_a \Sigma V_b A}$$

$$= K\frac{\left[\frac{\Sigma V_a B}{\Sigma V_a} + \frac{\Sigma V_b A}{\Sigma V_b}\right]}{1 - K\frac{\Sigma V_b A}{\Sigma V_b}} \text{ (dividing numerator and denominator by } \Sigma V_a \Sigma V_b.)$$

Since K is small, this equals

$$K\left[\frac{\Sigma V_a B}{\Sigma V_a} + \frac{\Sigma V_b A}{\Sigma V_b}\right] . \quad . \quad . \quad . \quad . \quad (2)$$

If, now, the price of each American export changes in the ratio $1 : m_a$, and the price of each British export in the ratio $1 : m_b$,

[1] $\frac{d\left(\frac{A}{1-A}\right)}{dA} = \frac{A}{(1-A)^2} + \frac{1}{(1-A)} = \frac{1}{(1-A)^2}.$

[2] Using the formula $\frac{\Sigma p_o q_1}{\Sigma p_o q_0}$.

the price ratio for each product will change in the ratio $1 : \frac{m_a}{m_b}$. It is evident that the ratio of the price indices of the two countries will also change in the ratio $1 : \frac{m_a}{m_b}$. In other words, the proportionate change in the price ratio for each product and in the price-index ratio will be $\frac{m_a}{m_b} - 1$. Let us call this P.

The product elasticity of substitution will then be $\frac{K}{P}$, and the total elasticity of substitution will be

$$\frac{K}{P}\left[\frac{\Sigma V_a B}{\Sigma V_a} + \frac{\Sigma V_b A}{\Sigma V_b}\right].$$

The term in brackets has been called the index of similarity of exports. If the two countries have no exports in common it is zero. The first term is zero because, when America exports a product, Britain does not; hence, when V_a is not zero, B is zero. The second term is zero for similar reasons.

When the (value) pattern of exports is exactly the same, the index is unity. $\frac{V_a}{V_b}$ is constant, and the index may be re-written

$$\frac{\Sigma V_b(1 - A)}{\Sigma V_b} + \frac{\Sigma V_b A}{\Sigma V_b} = 1.$$

Where K is not the same for each product, the proportionate change in the ratio of the American to the British volume indices will be

$$\frac{\Sigma V_a KB}{\Sigma V_a} + \frac{\Sigma V_b KA}{\Sigma V_b}$$

$$= \overline{K}\left[\frac{\Sigma V_a B}{\Sigma V_a} + \frac{\Sigma V_b A}{\Sigma V_b}\right] + \left[\frac{\Sigma V_a Bk}{\Sigma V_a} + \frac{\Sigma V_b Ak}{\Sigma V_b}\right]$$

where $\overline{K}$ is the (arithmetic) mean of K, and k the deviation from it. The first set of terms is the same as (2) with $\overline{K}$ substituted for K. An examination of the second set of terms suggests no obvious reason why they should be biased away from zero, so that the assumption that K is the same, for each commodity, as the arithmetic mean of the individual K's does not seem to introduce any bias into the derivation of the total elasticity.

APPENDIX D

Errors in the Intercepts of the Regression Lines on the Equal Quantity and Equal Price Axes

Using the notation of Appendices A and B, let the true demand substitution schedule for commodity R be

$$X_1' = A_r + B_r X_2'$$

$$i.e., \quad (\bar{X}_1 + x_1 - \bar{E}_1 - e_1) = (\bar{A} + a_r) + (\bar{B} + b_r)(\bar{X}_2 + x_2 - \bar{E}_2 - e_2).$$

Summing and dividing by N (the number of observations), we get

$$\bar{X}_1 = \bar{A} + \bar{B}\bar{X}_2 + \frac{\Sigma b_r x_2}{N} + \frac{1}{N}(\Sigma a_r + \bar{B}\Sigma x_2 - \bar{B}\Sigma e_2 + \bar{X}_2\Sigma b_r - \bar{E}_2\Sigma b_r - \Sigma x_1 + \Sigma e_1) + (\bar{E}_1 - \bar{B}\bar{E}_2) - \frac{\Sigma b_r e_2}{N}.$$

The terms in the first bracket are necessarily zero. Those in the second are zero, assuming that the errors of observation are unbiased (the case of biased errors is dealt with on pp. 501–2). The last term tends to zero, since there seems no reason to expect correlation between b_r and e_2. We are thus left with

$$\bar{A} = \bar{X}_1 - \bar{B}\bar{X}_2 - \frac{\Sigma b_r x_2}{N} \quad . \quad . \quad . \quad . \quad (1)$$

$\bar{A}$ is the average intercept on the equal price axis (*i.e.*, the value of X_1 when $X_2 = 0$) that we wish to discover. The equation of the regression line we find by the method of least squares is

$$(X_1 - \bar{X}_1) = b(X_2 - \bar{X}_2)$$

$$i.e., \quad X_1 = (\bar{X}_1 - b\bar{X}_2) + bX_2.$$

The intercept on the equal-price axis that we find is thus

$$a = \bar{X}_1 - b\bar{X}_2 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (2)$$

Hence

$$\bar{A} - a = \bar{X}_2(b - \bar{B}) - \frac{\Sigma b_r x_2}{N}. \quad . \quad . \quad . \quad (3)$$

Since we assume that the true average slope is flatter than the observed slope, and since both b and $\bar{B}$ are negative, $(b - \bar{B}) > 0$. When $\bar{X}_2 > 0$, the first term on the right-hand side of (3) is thus positive and, when $\bar{X}_2 < 0$, it is negative. But, assuming upward sloping supply substitution curves, when $\bar{X}_2 > 0$, steep slopes of the demand substitution curves (*i.e.*,

positive b_r's) will tend to be associated with high relative prices (*i.e.*, positive x_2's), and therefore the second term will tend to be negative. Similarly, when $\bar{X}_2 < 0$, the second term will tend to be positive. We therefore cannot say whether the calculated intercept on the equal-price axis is biased to left or to right. If, however, the supply substitution curves are horizontal or downward sloping, we can say that the calculated intercept will be biased to the left when $\bar{X}_2 > 0$, and to the right when $\bar{X}_2 < 0$. In any case it will be unbiased when $\bar{X}_2 = 0$, *i.e.*, when average relative price is unity.

For exports to Commonwealth and non-Commonwealth countries, $\bar{X}_2$ equals $-0{\cdot}0128$ and $-0{\cdot}0357$ respectively. If the supply substitution curves are horizontal, the last term in (3) tends to zero, so that

$$\bar{A} = a + \bar{X}_2(b - \bar{B}) \quad . \quad . \quad . \quad . \quad (4)$$

Assuming $\bar{B}$'s of -3, -4 or -5, the intercept for exports to Commonwealth countries falls from the calculated figure of 0·22 to 0·21, 0·20 or 0·19, while that for exports to non-Commonwealth countries falls from the calculated figure of 1·36 to 1·26, 1·16 or 1·07. The ratio of the intercepts falls from the calculated figure of 6·2 to not less than $5\frac{1}{2}$.

If the supply substitution curves are downward sloping, both intercepts will tend to fall further, and the ratio may also fall further, but there seems to be no way of estimating the probable amount.

If the supply substitution curves are upward sloping, the last term in (3) tends to be positive, since $\bar{X}_2$ is negative in both cases. A lower limit for the true value of the intercept for exports to non-Commonwealth countries is thus given by (4), *i.e.*, 1·07 for a true $\bar{B}$ of -5. The corresponding figure of 0·19 for exports to Commonwealth countries will tend to be raised by the positive last term in (3), but, as $\bar{X}_2$ is not greatly below zero, we may perhaps guess that the true intercept is not greatly in excess of, say, 0·25, even after allowing for the correction necessitated by underestimation of U.S. exports to Canada. If this is correct, the ratio of the true intercepts is thus at least 4.

There may have been quality differences and differences in methods of valuation that applied equally to exports to each group of countries, but, provided these were not too large, and provided the true slopes for the two groups of countries were not very different, it does not seem unreasonable to assume that, when price (corrected where necessary) was equal, relative

quantity (U.S. : U.K.) was probably at least four times as great for non-Commonwealth as it was for Commonwealth countries.

We now turn to the intercept on the equal quantity axis, *i.e.*, the value of X_2 when $X_1 = 0$. The intercept we wish to find is

$$I = \frac{-\bar{A}}{B} = \frac{-\bar{X}_1}{B} + \bar{X}_2 + \frac{\Sigma b_r x_2}{NB}.$$

The calculated intercept is

$$i = -\frac{a}{b} = -\frac{\bar{X}_1}{b} + \bar{X}_2.$$

Hence $$I - i = \bar{X}_1\left(\frac{1}{b} - \frac{1}{B}\right) + \frac{\Sigma b_r x_2}{NB}.$$

Now $\left(\frac{1}{b} - \frac{1}{B}\right) < 0$ and $\frac{\Sigma b_r x_2}{NB}$ tends to have the opposite sign from $\bar{X}_2$ if the supply substitution curves slope upwards, the same sign if they slope downwards and to be zero if they are horizontal.

For exports to the Commonwealth, $\bar{X}_1 < 0$ and $\bar{X}_2 < 0$. Hence $I > i$ if the supply substitution curves are upward sloping or horizontal, while if they are downward sloping no conclusion can be drawn. For exports to non-Commonwealth countries, $\bar{X}_1 > 0$ and $\bar{X}_2 < 0$. Hence $I < i$ if the curves are downward sloping or horizontal, while if they are upward sloping no conclusion can be drawn. Hence the statement, in the footnote to p. 508, that the figure obtained for relative price where the quantity of exports was equal may well be too low for exports to Commonwealth countries and too high for exports to non-Commonwealth countries.

For exports to all countries in 1934–38, $\bar{X}_1 < 0$ and $\bar{X}_2 < 0$. If the supply substitution curves are horizontal, and $B = -5$, the antilogarithm of I works out at 0·864. If the supply substitution curves slope downwards, the true figure is lower, but if they slope upwards it is higher. Hence the figure of 86½% on p. 503.

Appendix E

Imperial Preference [1]

It was stated in the text that the average margin of preference enjoyed by U.K. exports to British Commonwealth countries

[1] This appendix is almost wholly the work of Miss Rosemary Orton. Much valuable help was obtained from London representatives of Dominion Governments.

before the war, but after Ottawa, was of the order of 10%. This was based on a calculation for 1937 (or the financial year 1937–38) covering countries that took 97% of U.K. exports to the Commonwealth.[1] The main sources used were the trade returns and, where necessary, the tariff lists, of the various countries.

For each product imported into a Commonwealth country from the U.K., the percentage margin of preference is the difference between the duty that would have been paid had the product been American and the duty actually paid on the U.K. product, expressed as a percentage of the value of the imports from the U.K., excluding duty. The average percentage margin of preference on all imports from the U.K. is the average of the percentage margins of preference on the various products weighted according to the value of imports of each product from the U.K. This is the same as the difference between the duty that would have been paid on the total of imports from the U.K. had the goods been American and the duty actually paid, expressed as a percentage of the total value of imports from the U.K.

The average percentage margin of preference for each country is shown in column (5) of Table XI. It will be seen that the average of these figures, weighted according to U.K. exports to each country in 1937 (column (1)), was 9–10%. This represents the difference between the duty that would have been paid on all U.K. exports to Commonwealth countries had they been American and the duty actually paid, expressed as a percentage of the value of all U.K. exports to Commonwealth countries.

The method of calculation used tends to overstate the average margin of preference in so far as the existence of preference presumably tends to increase the proportion of U.K. exports enjoying higher preferences and to reduce the proportion enjoying lower preferences or none at all. Likewise, it might be expected to increase the proportion of U.K. exports sent to countries granting the higher average preferences. If the various margins of preference were weighted according to the pattern that exports would have taken without preference, or according to the value of U.S., rather than U.K., exports to Commonwealth countries, one would expect the final figure to be lower, though this tendency might, of course, be offset by other factors.

The notes to Table XI describe only some of the difficulties involved in the calculations. The main purpose of the table is to help to show how the final figure of 10% was reached. The

[1] Defined for this purpose as countries classified as "British" in the U.K. trade returns.

results obtained for the various countries, although shown for convenience with some degree of precision, are subject to a considerable margin of error. The following broad picture is, however, probably correct and may be of some interest:

Of U.K. exports to Commonwealth countries, one-third went to Canada, Australia and New Zealand, which gave an average preference of around 20%; one-third went to India and South Africa, which gave an average preference of around 5%; one-sixth went to Eire, which on balance gave little preference, or to territories giving no preference at all; one-sixth went to miscellaneous countries, which gave various rates of preference averaging about 10%.

It is hoped to publish more details at a later date.

No account has been taken of preference given through import quotas or by any method other than import duties.

TABLE XI

Margins of Preference 1937

Country.	(1) % of total U.K. exports to British countries.	(2) % of trade covered.	(3) % of imports from U.K. given preference.[4]	(4) % average margin of preference on goods given preference.	(5) % average margin of preference on all imports from U.K.
New Zealand	8·0	100·0	88–90	25–27	23–24
Canada	10·9	99·7	88	23	20
Southern Rhodesia	1·2	99·5	96	19–20	19
Australia	14·9	100·0	90[1]	19[1]	17[1]
British Guiana	0·5	99·8	93	18–19	17
Channel Islands	2·2	59·1	73–86	18–39	15–29
Jamaica	0·8	99·9	83	15	12–13
Trinidad and Tobago	1·0	99·4	64	19	12
Burma	1·3	98·6	62–93	10–21	9–13
Northern Rhodesia	0·4	99·8	93–97	9–11	9–10
Malta	0·5	100·0	71	12	8
Ceylon	1·6	97·2	70–86	8–21	7–8
Federated Malay States	1·2	97·9	44–58	11–19	6–8
India	14·2	96·0	50	12	6
Union of South Africa	16·5	99·3	39–43	5–8	2–4
Straits Settlements	3·4	100·0	24	13	3
Gibraltar	0·4	100·0	5–7	24–48	2
Hong Kong	1·3	100·0	5[2]	15	1
Eire	8·6	99·3	10	13–31[3]	1–2[3]
Territories granting no preference[6]	8·2	100·0	0	—	0
Total of above countries	97·1	98·6[5]	55–57[5]	15–18[5]	9–10[5]

[1] Taken directly from the official Year Book.
[2] Takes no account of additional duty of 10% on certain U.K. goods.
[3] Allows for additional 10% duty on certain U.K. goods.
[4] Refers to imports from the U.K. that were covered in this calculation.
[5] Weighted average.
[6] Nigeria (including British Cameroons), Gold Coast (including Togoland) most of British East Africa, Anglo-Egyptian Sudan, Palestine, Aden, New Guinea and Papua.

GENERAL NOTES ON TABLE XI

Column (1).

Calculated from *Annual Statement of Trade of the U.K.*

Columns (2)–(5)

Calendar year 1937 for New Zealand, Northern and Southern Rhodesia, Trinidad and Tobago, South Africa, Eire, British Guiana, Malta, Jamaica, Hong Kong; financial year 1937–38 for the rest.

In calculating the preference margins it was sometimes necessary to give upper and lower limits for a small percentage of items for which it was impossible to reconcile the classifications in the trade returns with those in the tariff lists. Several trade returns contained, for example, items such as "other foods" and "other textile manufactures". It was impossible to find either the exact amounts given preference or the amount of preference, if any, conceded. This kind of difficulty accounts both for many of the percentages in Column 2 being less than 100 and for the outside limits in columns 3, 4 and 5 which take the place of precise figures. It also, together with rounding, accounts for the apparent slight inconsistencies between the last three columns.

WEIGHTING

A. *To obtain average figures for each country.*

The percentage margin of preference for each product was weighted by the value of imports from the U.K. as follows:

(*a*) Australia, Canada, Jamaica, Trinidad and Tobago, South Africa, India. Value of imports on which preference was granted.

(*b*) New Zealand, Northern and Southern Rhodesia, British Guiana, Malta, Eire, Hong Kong. Value of imports originating in the U.K. Since the qualification for preferential rates is that a certain percentage of an article's value should be the result of British labour (the percentage varying with the importing country), the figures given in columns (3) and (5) may be slightly above their true value.

(*c*) Channel Islands, Burma, Federated Malay States, Gibraltar, Ceylon, Straits Settlements. Value of U.K. exports as given in U.K. *Annual Statement of Trade*, Vol. IV. This will also give an upward bias to the figures in columns (3) and (5), since the U.K. figure includes all goods which in the U.K. have "undergone operations" which do not "leave them essentially unchanged."

In the Canadian trade returns imports are attributed to the country from which they are consigned. The margins of preference on the separate items were weighted by the value of imports under the preferential tariff and then expressed as a percentage of the total value of imports *consigned from* U.K. (as opposed to the total value of imports *originating in* U.K. for other countries). The figures for Canada in columns (3) and (5) are therefore, relatively, underestimates.

B. *To obtain average figures for all British countries.*

For consistency the figures for each country were weighted by total exports of U.K. produce and manufactures to each country (column (1)).

THE ORIGINS OF RESALE PRICE MAINTENANCE: A STUDY OF THREE BRANCHES OF RETAIL TRADE[1]

I

THE movement in many branches of retailing to foster the practice of resale price maintenance dates from the last two decades of the nineteenth century. Though the development was not the same in every respect, it is possible to discern uniformities in the mainsprings of the movement and in the resistances it encountered in several trades. This paper examines the motives and pressures which gave rise to demands for resale price maintenance in the grocery, drug and patent medicine, and tobacco trades,[2] and the considerations which prompted manufacturers to satisfy or to reject these demands. It is not suggested that the account would necessarily be the same for all other branches of industry and distribution; on the other hand, there is much evidence that the factors and influences, which are discussed here, were not peculiar to the selected trades.[3]

The discussion is based upon information which has been obtained from retail trade journals,[4] covering the formative years of resale price maintenance up to about 1906. During the period the journals contain fairly full details of the activities of trade organisations and the results of negotiations between manufacturers and trade organisations, as well as numerous comments on developments by trade organisers, retailers and manufacturers. In particular, the opinions and observations of the most influential

[1] I am grateful to the Economics Research Division of the London School of Economics for research assistance.

[2] No detailed or chronological account is presented of the course of developments in the selected trades.

[3] Two articles, "Manufacturers and Retail Prices," in *The Times: Financial and Commercial Supplement*, 1/10/1906 and 8/10/1906, contain an excellent general survey of the forces behind the price maintenance movement. The present study fully bears out the analysis presented there. The two articles aroused considerable discussion in the retail trade press. It was suggested that *The Times* was not impartial, because at that time the Times Book Club was engaged in its historic war against price maintenance in the book trade.

[4] The following are the principal journals used (the abbreviations used in this paper are indicated in brackets):

The Grocer	(*G.*)
The Chemist and Druggist	(*C. & D.*)
Anti-Cutting Record	(*A.C.R.*)
The Tobacco Trade Review	(*T.T.R.*)

The *Anti-Cutting Record* was the official organ of the Proprietary Articles Trade Association in the chemists' trade.

figure in the history of resale price maintenance, the late Sir William Glyn-Jones, are valuable for revealing the atmosphere in which the price maintenance movement was launched and the difficulties it had to overcome. Glyn-Jones was the founder in 1895 of the Proprietary Articles Trade Association (P.A.T.A.) for promoting and administering resale price maintenance in the chemists' trade; he influenced developments in the grocery trade, and was consulted by associations in other trades which were anxious to safeguard retail profit margins. He also played an important part in the organisation of a chemists' P.A.T.A. in Canada in 1926; this association dissolved itself after an official investigation had concluded that its activities were against the public interest.[1]

2

The last quarter (and more) of the nineteenth century was a period of growing price competition in many branches of retailing. New types of retailing establishments were rapidly gaining ground. The "middle class" co-operative stores (*e.g.*, the Civil Service Supply Association and Army and Navy Stores), the universal providers (department stores such as Whiteleys and Harrods) and the multiples (*e.g.*, Home and Colonial Stores, Boots and Salmon and Gluckstein) were making use of their trading advantages to secure patronage by offering inducements to the public largely in the form of extensive and significant price reductions,[2] and large sections of the public responded to the attraction of lower prices.[3] The "working-men's" co-operative

[1] Some biographical details concerning Glyn-Jones may be of interest. Born 1869; after serving as chemist's assistant in the Mile End Road, carried on business as chemist in Poplar; active in organisation of P.A.T.A. from 1895 onwards; called to the Bar, 1904; Liberal Member of Parliament for Stepney, 1911–18; Parliamentary Secretary to Minister of Munitions, 1916, and to Minister of Reconstruction, 1917; knighted 1919; secretary, Pharmaceutical Society, 1918–26; died in Vancouver, 1927.

[2] The lower prices were widely publicised in advertisements and price lists. Some multiples appear to have used the appeal of low prices with a vigour which is startling to modern eyes. When Lewis and Burrows, Ltd. opened branches in the Pimlico area, circulars were distributed announcing that the firm, "the popular store chemists, have declared war against the extortionate prices charged by chemists in the district" (*C. & D.*, 28/5/1898, p. 895). Boots, Ltd. used an advertisement in Guernsey, headed, "Great Robbery in the Drug-Trade at Guernsey—Thousands of Pounds" (*C. & D.*, 4/6/1898, p. 933).

[3] It would be otiose to document the nature of the public response to the offer of lower prices. An unusual example may be of interest. Glyn-Jones noted that some patients would tear off the bottom part of a doctor's prescription form, on which some proprietary article had been prescribed. Only the remainder of the prescription, requiring something to be dispensed, would be presented to the chemist, because the proprietary article itself could be obtained more cheaply at stores which could not dispense (*C. & D.*, 2/5/1896, p. 630).

societies were steadily expanding and extending their operations geographically. The competition provided by new methods of retailing was superimposed upon the probably more leisurely competition that existed among the typical small-scale retailers of an earlier period. The so-called " legitimate " retailers (operating on a small or medium scale along traditional lines) felt the severe effects of the enhanced competition: the smaller share of the trade that remained for them had to be transacted at lower prices and margins of profit. Moreover, they had as before to contend with competition within their own ranks. The intensity of this kind of competition increased, for some were quick to follow some of the methods of their large-scale rivals. Prices and margins tended to be reduced even where the more substantial competitors had not yet made their presence felt.[1]

The branding or trade-marking of merchandise on a growing scale [2] increased the severity of retail competition. The advertising of branded goods by manufacturers and their acceptance by consumers made it relatively easy for the retail trade to handle the merchandise. The large-scale retailing firms could make use of relatively unskilled labour for the simplified tasks of selling; and the entry of new firms into retailing became even easier than it had been before. Further, branding made it possible, for example, for grocers and publicans to sell tobacco products and for grocers to sell proprietary medicines, since no special knowledge of the merchandise was necessary to sell the branded goods of other trades. The universal providers had weakened the traditional division of types of merchandise among different retail

[1] A grocer in a reminiscing letter on the origin of price cutting noted that " severe and senseless cutting was rife years before ' companies' branch shops ' [multiples] were in every street " (*G.*, 7/3/1914, p. 694). An article on " Company Chemists " pointed out that " the cutter was with us before the company chemist appeared on the scene, but except in his own immediate locality he was loftily ignored " (*C. & D.*, 30/1/1897, p. 163).

Some of the new types of retailing establishment affected prices over a large area. The London stores, for example, had to be taken into account by provincial grocers and chemists. Changes in their price lists were regularly reported in *The Chemist and Druggist* in the 1890s.

At the first annual conference of the Federation of Grocers' Associations in 1891 there was some discussion on the appropriate level of grocers' profit margins. A grocer of Leamington pointed out that " it was of no use to talk of 8 per cent, or any other percentage, for they had to follow in the lines which were set by the Army and Navy and other stores " (*G.*, 21/11/1891, p. 963). The Army and Navy Stores were (and are) in London.

[2] In the period under review branded goods were not equally important in the three trades. It would seem that branded goods were of greatest importance (as a percentage of total trade) in the chemists' trade, and of the least in the grocery trade.

trades; the success of proprietary articles tended to hasten the process, and to sharpen competition still further. Not only was competition keener within each trade, but those in different trades also competed with one another.

The evils of "cutting" were a dominant and recurrent theme in contemporary retail trade journals which reflected the views of the ordinary or "legitimate" small-scale retailers. Retail associations spent many hours in denunciations of cutting and the cutters. The evils were attributed to the activities of the several types of retailing innovators and to new-comers generally,[1] and to the less co-operative members of the "legitimate" trade. Further, the chemists blamed the grocers for the unsatisfactory prices of patent medicines, and each trade was apprehensive of the "illegitimate" competition of outsiders.[2]

It was frequently alleged that the cutters were practising what to-day is called loss-leader selling (which term appears to be of more recent origin). The practice of selling some items of merchandise at very low prices in order to attract custom was said to show that the new types of firm were using unfair or deceptive methods of trading. From the evidence there can be little doubt that, as it was often expressed, sprats were thrown to catch mackerel. The practice was used by all kinds of retailers, large and small; and branded as well as unbranded goods were used for the purpose. But the effects of general price-cutting and of selective price-cutting were substantially the same: price competition and price reductions were effective over a considerable range of goods. It was this that caused alarm among the retailers. Glyn-Jones noted that cutting made it necessary for retailers to conduct "a large portion of their trade on lines which left no profit whatever."[3] A prominent provincial grocer reported that his firm "found that we had successively reduced one article after another . . . until nearly every article was sold at barely over cost. This arose from the usual cause: a grocer in one district would cut three or four of them; a grocer in another district would, in retaliation, cut five or six of another lot; and so at last it

[1] On the latter point, for example, Glyn-Jones remarked that "he had come across a trader occasionally who had really advocated cutting, but that was generally a young man who entertained the idea that he could only get a footing by cutting below the present prices" (*G.*, 19/2/1898, p. 468).

[2] The importance of the different types of "cutting" firms—stores, multiples, aggressive small-scale retailers and "dabblers"—was not the same in each trade, or in the various branches of each trade (branded and unbranded goods), or in different areas. The common feature in the three trades was the strength and effectiveness of price-cutting generally.

[3] *G.*, 17/7/1897 Supplement, p. 21.

came about that we were all selling alike." [1] Some years later a grocer who "flattered himself that he could purchase on the very best terms" confessed his inability to match the prices of "some of the big shops." "Instead of throwing a sprat to catch a mackerel, they would really have to throw a mackerel to catch a sprat, for it was difficult to find an article that was not cut by these shops." [2]

Many of the numerous contemporary references to loss-leader practices may be discounted. The complaining retailers would naturally have been unwilling to concede that their competitors could undersell them generally, since such an admission would have implied that their rivals were more efficient or more successful in meeting the requirements of large numbers of consumers.[3] Many of the allegations about selling below cost were equally unfounded. Retailers did not always know at what prices their principal competitors were able to buy proprietary articles or other goods from suppliers. Manufacturers were generally prepared to grant large discounts to large buyers. "Many a time a grocer is led to think that at a company shop some article is being cut at a ruinous price, whereas the real truth is that the multiple-shop firm is enjoying more advantageous terms of purchase." [4] The practice of granting substantial quantity discounts encouraged price competition at retail, and manufacturers were often censured for supporting the cutters and making cutting possible. "It was the owners of 'proprietaries' who made the cutting movement possible to the stores" because discounts were granted so generously that ". . . it came about that those places [the stores] could get such terms from the suppliers . . . as permitted them to cut the goods down to, and sometimes below, the prices which the retailer had to pay the selfsame supplier." [5]

[1] John Williams, in *G.*, 21/12/1901, p. 1597. He referred to twenty-nine proprietaries made by one firm; and indicated that more than 1,500 brands were in a similar unprofitable condition.

[2] *G.*, 16/12/1911, p. 1647.

[3] The universal providers were sometimes said to use entire departments as loss-leaders, and this might have been so in some cases. But where the same firm was said by different groups of retailers to be using several different departments in the same way, one may suspect exaggeration.

In the grocery trade some of the larger multiples handled only a small number of staple lines. The scope for loss-leader tactics would have been limited.

[4] Editorial, *G.*, 9/1/1904, p. 86.

[5] Letter in *C. & D.*, 2/5/1896, p. 643. For a similar view, see *T.T.R.*, June 1895, p. 212.

It would be incorrect to ascribe the success of the new types of establishment wholly to their buying power.

3

The hard-pressed retailers attempted to improve their own competitive position or to neutralise the competitive advantages of their rivals in a variety of ways. For example, schemes were canvassed, particularly in the grocery trade, for groups of small traders to combine their purchases to secure the better terms which their bulk-buying rivals enjoyed. Attempts were sometimes made to persuade manufacturers not to grant favourable discounts to large-scale buyers. Local agreements on retail prices appeared to be a promising method of preserving profit margins, and local associations of grocers, chemists or tobacconists attempted to introduce minimum price lists and to secure adherence to them. But not all retailers belonged to the sponsoring associations, and the larger firms generally refused to be parties to price agreements. Members themselves found it difficult to honour their undertakings when non-members were cutting below the agreed prices, whose one-sided maintenance made new entry and price-cutting profitable. The numerous reports of the failure of price-fixing agreements constantly refer to the "troublesome minority" and to the fact that "one cutter makes many."[1] There were no effective measures of enforcement against members or non-members.

The success of proprietary articles gave new hope to retailers after other attempts at meeting or neutralising the competition of larger or more efficient or enterprising firms had met with limited success. The attitude of the "legitimate" trade towards proprietary articles tended to become ambivalent. On the one hand the retailer saw in them a threat to the value of skill and experience in retailing and a direct means to intensified competition. On the other hand, branded goods offered prospects of securely enforced minimum retail prices because each manufacturer was in a position to control the supply of his brands to retailers and so

[1] Quoted from *T.T.R.*, January 1895, p. 2.

Two specific examples of the numerous reported failures may be mentioned. A member of Southampton Grocers' Association: "We have in the past endeavoured to do all in our power to regulate somewhat the retail prices of goods, especially what we term leading articles or well-known brands of goods. This, we regret to say, has not been so successful as we should have hoped it would be; and since fresh difficulties have cropped up in the shape of new competition, it has made our scheme still more unworkable" (*G.*, 16/8/1890, p. 269).

"It has often been said that it is impossible to maintain prices for any length of time by purely voluntary agreement amongst local chemists, and the position in Glasgow proves the case." Here all chemists had agreed to charge certain minimum prices for some brands, and the arrangements worked well for two years. Then Boots, Ltd. opened a branch and could not see their way clear to join the arrangement, which came to grief (*P.A.T.A. Yearbook*, 1904, p. 94).

to discipline price-cutters by withholding supplies.[1] According to Glyn-Jones the "first axiom is that the key to the situation lies in the manufacturer's hands; he it is who can control supplies, and without this control . . . it would be impossible to arrange matters by mutual consent of the traders."[2] Retailers, who were anxious to proscribe retail price competition, perceived that the manufacturer of a proprietary, by virtue of being its sole source of supply, had the means of withholding supplies from particular retailers; and that this power was not enjoyed by any one manufacturer of an unbranded staple line.[3]

Resale price maintenance or protected prices (to use the earlier term) for branded goods came to be regarded by large numbers of retailers as the most promising device by which gross profits could be maintained or raised, and by which competitors could be deprived of their most important method of attracting customers and of enlarging their trade. Glyn-Jones was aware that "the public did not expect chemists to work for nothing, but they would certainly go where they could get things cheapest. That was the only reason of their forsaking the chemist for the stores. But if the prices were all fixed, there would be no inducement to go to the stores or such places."[4] To him resale price maintenance ". . . was not only a question of ensuring a better profit on proprietary articles, but, what was more important to them, to rob the cutter and stores of the advantage which followed their sale of these goods to the public."[5]

4

Retailers, who were in favour of resale price maintenance, had to persuade manufacturers that a system of protected prices

[1] Thus the decision of Tate's, in 1898, to brand and packet their sugar in 2-lb. and 4-lb. packages had a mixed reception from grocers. Some complained of an "attempt to capture a most important source of profit by making it a proprietary article" (*G.* 18/6/1898, p. 1666); others appear to have favoured the decision, because the refiners undertook to guarantee a minimum retail gross margin on an article that was notoriously subject to price-cutting. (See "Notes on Novelties," *G.*, 11/6/1898, Supplement, p. 12.)

[2] *G.*, 10/10/1896, Supplement, p. 40.

[3] See, for example, the remarks of John Williams, a leader of the price maintenance movement in the grocery trade, in *A.C.R.*, February 1898, p. 65; and of Glyn-Jones in *G.*, 19/2/1898, p. 468.

[4] *C. & D.*, 22/5/1897, p. 803.

[5] *C. & D.*, 23/5/1896, p. 748.

In 1896 Boots, Ltd. advertised their protests against the "price ring" of the P.A.T.A. The fact that "Boots and company were evidently aware of its importance" made cautious retailers see "more in this Association than they had thought" (*C. & D.*, 29/8/1896, p. 337); and this caused many chemists to join the Association.

for proprietary articles was in their own interests as well as in the interests of the retail trade. The arguments used to support what proved to be a difficult task of persuasion were a mixture of offers of friendship and support, of cajolery and of threats.

The manufacturers were told that they had to choose between the "legitimate trader or retailer of proprietary articles and the stores, and that they could not obtain the friendship and goodwill of both." [1] "The case of the retail druggist must be considered by manufacturers and wholesale dealers, spite of the fact that Mr. Boot and similar pushing men are valuable customers . . ." [2] It was argued that in the long run the support of the numerous "legitimate" retailers was more valuable to manufacturers than that of the large stores, the multiples and other price-cutters. It was contended that the large stores and cutters generally used proprietary articles to build up a reputation for low prices; but that, having built up a large business, they would progressively dispense with the proprietary articles, when they had served their purpose, and substitute their own productions for them.

Somewhat paradoxically the practice of substitution, which the retailers demonstrated was detrimental to the interests of manufacturers when practised by their successful retail competitors, also served to support their other main line of argument. It was argued that "the interests of the manufacturers and the retailers are identical . . . and if the former can insure a fair profit for the latter, they will at the same time directly benefit themselves." But if the manufacturers were not prepared to help the retailers to secure a "living" profit, "it is possible for the grocers to influence the public in their demands, and to direct them into channels which are profitable—for the grocers." [3]

5

It was realised that the arguments would not impress manufacturers favourably unless they were presented and reiterated by organised bodies representing large numbers of retailers. The demand for protection would have been ineffective without strong organised backing; neither the offers of friendship nor the threats of trade opposition would have appeared substantial. What was insignificant when practised loosely by individual small-scale retailers would become more serious when retailers were organised and could speak and act with some measure of

[1] Glyn-Jones in *C. & D.*, 2/5/1896, p. 630.
[2] Editorial in *C. & D.*, 3/10/1896, p. 521.
[3] Editorial in *G.*, 17/9/1887, p. 464.

solidarity. "The retailers held a powerful weapon, for it was evident that manufacturers must join [the P.A.T.A] if retailers combined to boycott their goods." [1] It would be apparent to manufacturers "if chemists joined the Association in sufficient numbers that they could not withstand the organised opposition of a combined trade." [2]

By the early 1890s there were numerous local associations of retail traders in various branches of retailing. Many of these interested themselves in the prices of branded goods. National federations of the local grocers' and tobacconists' associations were founded in 1891; both attempted to further the cause of price maintenance and were responsible in the 1890s and subsequently for negotiations with manufacturers. In the chemists' trade the Proprietary Articles Trade Association (P.A.T.A.) was founded in 1895 by Glyn-Jones and came into operation in 1896. At first its functions were narrowly confined to resale price maintenance and related issues. It was composed of manufacturers, wholesalers and retailers pledged to the promotion of the practice of price protection; but there is no reason to doubt its founder's denial "that the movement was a manufacturers' movement in its origin. It started with the retail trade." [3]

The various trade associations gathered strength slowly, and some of them suffered occasional setbacks. At the end of the period under consideration many "legitimate" retailers (almost certainly the majority) were not subscribing members of their respective local and national trade organisations. Nevertheless, from the beginning these organisations were formulating the demands and pressing for them on behalf of larger numbers of retailers than their membership lists would have indicated.[4] Apart from the P.A.T.A., they were not solely concerned with price protection, but also presented the views of the "legitimate" trade on other matters, such as the enactment and administration of legislation affecting the trade.

It was Glyn-Jones's wish to form one large organisation for propagating and administering resale price maintenance in as

[1] Glyn-Jones at P.A.T.A. dinner, reported in *C. & D.*, 25/6/1898, p. 1016. Generally the word "boycott" was not used by leaders of the movement.

[2] Glyn-Jones in *C. & D.*, 20/2/1897, p. 317.

[3] Glyn-Jones in *G.*, 5/6/1897, p. 1411.

This assurance of the origins of the Association was given on many occasions; some retailers were apprehensive of any association which they believed to be a product of the initiative of manufacturers.

[4] On the other hand not all members of the National Federation of Grocers' Associations were in favour of its declared policy of promoting price protection.

many branches of trade as possible. "The advantages of joining forces under one organisation instead of the various trades each running its own separate organisation goes without saying. Our agitation is only one feature of what sooner or later must be a keen fight between individual traders as a class and the huge trading companies which are daily being formed to utilise cheap money. The struggle between the one-shop trader and the would-be trading monopoliser [*i.e.*, the multiples] is common to all businesses, and, in so far as chemists are traders, they have interests in common with the single-shop dealer, whether grocer or ironmonger. Each trade has its grievances against another. These must be sunk in order to effect a union of forces in the common interests of all traders. The wider and more diffused the influence of the P.A.T.A. the better will be its chance of complete success. At present the law allows us to combine, but an attempt may be made to alter that law. In such a case it would be of immense advantage to be able to influence our legislators through a united organisation of shop-keepers."[1] The grandiose objective was not achieved; but the gradual success of the P.A.T.A. greatly influenced developments in other trades.

6

The manufacturer, when considering whether or not to yield to retailer demands to protect his prices, faced a difficult problem of assessment. Some but not all retailers were in favour of the proscription of price competition; the manufacturer had to judge the relative strengths of the two broad groups of supporters and opponents, as well as the relative severity of the damage each group was likely to inflict upon him if dissatisfied with his decision.

Several of the important retailers who opposed resale price maintenance made known their views to the manufacturers; in the chemists' trade the battle of words between the supporters and opponents of protected prices was waged in the trade press with much skill and vigour. The opponents included the large stores and multiples as well as price-cutting firms generally. In

[1] Interview reported in *C. & D.*, 19/6/1897, p. 947.

The statement quoted above was made as a partial answer to the question which worried many chemists, why Glyn-Jones was so active at the time in efforts to organise an anti-cutting movement among grocers, who were regarded by many chemists as their most serious adversaries after the stores and multiples. The rest of the answer was that those manufacturers who sold their products through both chemists and grocers would not protect their prices unless grocers, too, pressed their demands for protection.

The "grievances" referred to in the statement would seem to point to the chemists' traditional complaint about the sale of patent medicines by grocers.

addition, the co-operative societies and private firms paying patronage dividends to customers were against resale price maintenance, particularly (or only) [1] if the payment of dividends on purchases to customers was interpreted (as the "legitimate" trade demanded) as an infringement of minimum resale price stipulations.

Manufacturers were almost certainly aware that the opponents of resale price maintenance, if thwarted by its introduction, would be in a strong position to extend the sales of substitute brands. Frequently they were large firms, well able to advertise widely and to finance production. Fears of their ability and determination to commence or to extend their own production or to promote substitute brands, if particular proprietaries were protected, would in retrospect have been justified. After six leading tobacco manufacturers in 1896 had entered into an "anti-cutting compact" with the organised retailers to protect the resale prices of packet tobaccos,[2] the leading multiple firm (Salmon and Gluckstein, Ltd.) extended the range of its own manufactures. A circular was issued to customers announcing "a series of new tobaccos" brought out "as a means of meeting the inevitable demand consequent upon the attempted artificial inflation in prices of proprietary tobaccos." [3] Harrods, the department store, appear to have withdrawn protected articles from their widely circulated price lists.[4] In 1906, after the P.A.T.A. had decided that the payment of dividends to consumers was a breach of minimum price stipulations, the Co-operative Wholesale Societies notified the retail societies that they would cease to sell P.A.T.A. articles: "Wherever practicable, we propose to manufacture or pack articles to replace those withdrawn, which, together with preparations manufactured by firms unconnected with the P.A.T.A., will enable you to supply your members with little, if any, inconvenience." [5]

[1] See circular letter issued by the Co-operative Wholesale Societies after the P.A.T.A. had decided that customer dividends infringed the principle of minimum retail prices. The circular stated that "we have never refused to conform to the conditions imposed by manufacturers so long as they did not affect any co-operative interest or infringe any co-operative principle." (The circular is reproduced in *G.*, 7/4/1906, Supplement, p. 8.)

[2] For an account of the "compact," see p. 538, footnote 2.

[3] *T.T.R.*, January 1897, p. 4.

[4] See letter reproduced in *The Stationery Trades Journal*, September 1906, p. 444.

[5] Circular reproduced in *G.*, 7/4/1906, Supplement, p. 8. In a later circular the Co-operative Wholesale Society indicated its own preparations and the brands for which they were replacements. The list included substitutes for some brands which were not on the P.A.T.A. list (*A.C.R.*, September 1906, p. 185).

On the other hand, " legitimate " retailers could express their displeasure with non-protected brands by attempting to substitute other brands, by refusing to co-operate in manufacturers' sales-promotion efforts and, generally, by keeping " unprofitable " lines in the back of the shop or under the counter. In the drug trade dispensing chemists had the facilities and skill to devise and prepare substitutes for many proprietary lines;[1] and many tobacconists and grocers had selections of " own brand " merchandise.[2] Moreover, combinations of retailers could sponsor the production of brands to be distributed solely by members. For example, the London and District Tobacconists' Association introduced a range of its own branded packet tobaccos in 1892,[3] and the Birmingham Association marketed its own brands in 1895.[4] Price maintenance was a much-publicised feature of the last two ventures. Though these attempts were not markedly successful, they served to show that organised retailers could take direct action against the interests of the manufacturers of branded goods. The sponsors of the Birmingham tobacco scheme believed that " we can only hope to receive practical consideration from others whose proprietary goods are cut, and bear little or no profit, when we learn to work for the good of all tobacconists in enabling them to own their own brands." [5] According to a leading London tobacconist the manufacturers " did not seem inclined to do anything until the retailers could show them something to make them alter their views." [6]

[1] The proprietors of Beecham's Pills withdrew their membership of the P.A.T.A. (to which they belonged though their product was not protected) after the *Anti-Cutting Record*, the organ of the P.A.T.A., had published a letter from a chemist giving his formula for a pill which he substituted for Beecham's. (See *A.C.R.*, November 1898, p. 3.)

[2] In some cases the initiative was taken by manufacturers who were prepared to pack articles carrying the retail buyer's name. A cocoa manufacturer advertised such services under the heading, " War to Proprietary Cocoas " (*G.* 2/3/1901, pp. 40–41).

[3] It was resolved to follow this course after a motion to approach the manufacturers once more to secure price protection had been defeated (*T.T.R.*, June 1892, p. 160).

[4] Other tobacconists' associations were encouraged to handle the brands.

[5] Statement by sponsors of Birmingham scheme, *T.T.R.*, November 1896, p. 502.

[6] *T.T.R.*, June 1897, p. 292.

In negotiations with retail organisations, tobacco manufacturers were apt to express their resentment of the practice of retailers having their " own brands." In a conference in 1896 a group of manufacturers complained that the retailers were " taking up arms against the manufacturers " (*T.T.R.*, September 1896, p. 383). In 1901 another group made acceptance of proposals for price protection of their goods conditional upon an undertaking that " every retailer . . . would forfeit the right of using brands of tobaccos, cigars, and cigarettes in his own name " (*T.T.R.*, September 1901, p. 406).

Manufacturers had to take into account the likely effects of the increased retail prices which would follow the adoption of price protection. Sales were likely to be affected adversely. Moreover, it was not unlikely that an increase in retail price would make it easier for retailers to substitute other brands; the public would be less unwilling to accept substitutes if their otherwise preferred brands had become more expensive.[1]

Finally, manufacturers could not be certain that those retailers who were agitating for price maintenance would refrain from substitution once resale prices were protected. In the chemists' trade, for example, in the earlier years of the P.A.T.A., there is evidence that substitution by the "legitimate" trade continued even after brands had been added to the protected list. Retail members of the P.A.T.A. were not required to bind themselves not to substitute for protected articles.[2]

7

The relevance of the considerations enumerated in the preceding section is evident from the explanations of manufacturers who were not willing to introduce resale price maintenance. For example, a chocolate and cocoa manufacturer explained that "we have never adopted the system of compulsory selling prices, as we find that a large number of our friends prefer to be free."[3] Another manufacturer complained in a retail trade journal that "it is not a pleasant experience to have to refuse business from buyers who are in a position to place large orders, simply because they are cutting grocers, and the task of following up retailers who are not adhering to regular rates, and endeavouring to induce them to fall into line, is a very thankless and sometimes a very hopeless one."[4] A manufacturer of a popular proprietary medicine, in turning down an invitation to join the P.A.T.A., noted that the

[1] This consequence of higher prices was stressed by Jesse Boot, the founder of Boots, Ltd., and by the Managing Director of Day's Southern Drug Company, Ltd., of Southampton, in *C. & D.*, 31/10/1896, p. 666, and 24/10/1896, p. 612.

[2] The chairman at a P.A.T.A. meeting announced that "there was an impression abroad that the members of the Association must agree not to substitute. Nothing of the kind would be asked, and it would be left to the discretion of the members" (*C. & D.*, 18/4/1896, p. 560). When the P.A.T.A. contemplated a change in its policy by ruling that patronage dividends were a form of price-cutting, a firmer attitude towards substitution by retailers was promised as a *quid pro quo* for the sacrifice required of manufacturers.

[3] Letter of Fry and Sons, in *G.*, 2/2/1901, p. 299. The firm added that "whenever the trade in any town desire to regulate prices we have done our best to assist them."

[4] Letter of B.P. Co., Ltd., in *G.*, 12/12/1903, p. 1582.

Association had " considerably under 2,000 retail members, and that 2,000 could not be placed in the balance for sales of proprietaries against the various big firms." [1] Leading tobacco manufacturers in 1896 were reported as having said that " on account of the very large purchases of packet tobaccos made by these cutting firms all over the country, they did not think they could afford to say that unless these firms would raise their prices they must close their accounts." [2]

There is much evidence pointing to the importance attached to the damaging effects of retail price increases. The proprietors of Pears soap in a letter to the P.A.T.A. pointed out that the adoption of price maintenance " would necessitate one of two courses : increasing the price to the public or diminishing it to the trade—both of which are impossible, as should be obvious to you." [3] Jas. Hennessy and Company of Cognac explained to a grocer who appealed for price protection that " there are two sides to the question. Yours, from the trade point of view [in favour of protection], is undoubtedly sound, and [protected prices] would make the retailer more anxious to sell our brandy. But from our point of view, the point is, would the public buy less if the price was raised ? " [4]

The importance of the effect of resale price maintenance on the level of the retail price is further borne out by the fact that many manufacturers were unwilling to risk their brands under resale price maintenance unless their competitors did likewise. They seem to have been anxious not to give their rivals any competitive advantage in the retail market. This reluctance to act alone was particularly strong in the tobacco trade. A retail trade journal noted " that little assistance is to be expected from them [the manufacturers]. In these competitive times they have to fight for their own hand, and when they profess to be eager to block the channels of supply, so far as the cutters are concerned, we may applaud their sentiments (which are splendid), but we may doubt whether they will have any practical effect ".[5] Leading tobacconists expressed the view that nothing useful would come of the retail trade agitation for protected prices until the manu-

[1] *A.C.R.*, April 1904, p. 94. [2] *T.T.R.*, September 1896, p. 382.

[3] *A.C.R.*, September 1906, p. 185.

The editorial comment was that " any one of the 220 something members of the P.A.T.A. Manufacturers' Section might with as much truth (or as little) say that his goods were entirely exceptional and should be used as cheap sprats for catching dearer mackerel."

[4] Correspondence published in *G.*, 16/12/1905, p. 1631.

[5] Editorial, *T.T.R.*, November 1891, p. 339.

facturers were combined for the purpose; [1] and the retail organisations were active in attempting to promote such combinations among the reluctant manufacturers. The first step to introduce resale price maintenance was taken by six manufacturers in concert (in 1896) only after several meetings had been arranged by the principal retail trade organisation.

The fear of being placed at a competitive disadvantage in the consumer market because of price maintenance was also present in other trades. A manufacturer of chemists' goods and a member of the P.A.T.A. stated that "they were not without competitors, but if the proprietors of kindred articles agreed to add their articles to the list [of protected articles] his firm would be most happy to do so." [2] A manufacturer of grocery products stated that "we have frequently tried to protect prices of our own brands, but found it was impossible, as the grocers themselves were only too ready to buy elsewhere for a cutting line. . . . The only conclusion we can come to is that it is impossible for the manufacturer to protect prices of his own specialities unless both the wholesaler and retailer are willing to meet him half-way by binding themselves not to buy goods of a similar nature from other firms and this we have not up to now found them willing to do." [3]

The introduction of resale price maintenance could be successful only if the active support of the "legitimate" retail trade outweighed all the disadvantages. The testimony of firms who discovered that the policy of protection was rewarding is therefore of interest. The proprietors of Hall's coca wine, one of the first items on the P.A.T.A. protected list, announced that "we are more than satisfied that it pays us to support the ordinary shopkeeper in a fair minimum profit. In maintaining this position we have lost the goodwill of some of the large co-operative societies, but our loss in this direction has been more than made up by the increased sales of the retail trade." [4] The proprietors of Scott's pills were "glad to say that the increased sales of their pills proved that they were right in their belief" that the public would not resent a higher retail price. They added that "formerly they had the greatest difficulty in getting [retailers] . . . to exhibit showcards or distribute handbills, or in any way assist the sale of their pills. Now, however, they were having applications

[1] *T.T.R.*, February 1893, p. 47.

[2] Representative of Oppenheimer, Sons & Co., Ltd., at P.A.T.A. meeting, *C. & D.*, 26/9/1896, p. 487.

[3] *Advertising*, March 1903, pp. 449, 450.

[4] Circular quoted in *C. & D.*, 20/11/1897, p. 808.

for handbills, etc., from hundreds of retailers in all parts of the country." [1]

8

The difficulty of assigning weights to the various conflicting considerations and the uncertainty of the outcome of the adoption of price maintenance were reflected in the hesitant approaches of manufacturers. The opinion of the trade was frequently canvassed. For example, Lever Brothers in a letter to the trade press asked, " what support would be given by the trade generally to the manufacturer who risked his trade in order to put a stop to the cutting evil? " [2] Sanitas Co., Ltd. conducted a poll of the trade to discover whether it should place its products on the P.A.T.A. list.[3]

Many manufacturers were careful not to offend the " legitimate " trade, even if the demands for price protection were to be left unsatisfied. Rejections tended to be conciliatory. Firms expressed their regrets, stressed the difficulties, asked for information, postponed decisions or sheltered behind the obvious division of opinion in the retail trade on the subject of price protection.[4]

Some manufacturers adopted compromise solutions, apparently in an endeavour to retain as much as possible of the goodwill of *all* retailers with the minimum of sacrifices. The following are some of the compromises which were adopted by manufacturers: some became subscribing members of the P.A.T.A. but did not place their brands on the protected list; [5] some introduced price maintenance with very low margins of retail profits,[6] sometimes after having obtained the agreement of leading price-cutting firms; in some cases price maintenance was applied to particular regions only, often after consultations with local retail associa-

[1] Statement at P.A.T.A. meeting, *C. & D.*, 26/9/1896, p. 487.

[2] Letter of Lever Brothers, *G.*, 10/9/1887, p. 414.

[3] Advertisement, *C. & D.*, 16/10/1897, p. xviii.

Partly as a result of the replies the firm decided not to introduce resale price maintenance; instead, some concessions were made to the trade. (See *C. & D.* 1/1/1898, p. 16, and Advertisement, p. 7; and footnote 3, p. 538.) The firm joined the P.A.T.A. in May 1898 and protected the prices of its products.

[4] For example, see letter of Bovril, Ltd. to Hull Retail Grocers' Association, *G.*, 16/9/1899, p. 698.

[5] See discussion, *C. & D.*, 26/9/1896, p. 487.

[6] For example, Allen and Hanbury introduced resale price maintenance in 1895 after they had " been pressed in many quarters to adopt some measures to prevent the cutting prices . . ." (*G.*, 13/4/1895, p. 882). The stipulated minima were cutting prices, according to an editorial in *C. & D.*, 23/3/1895, p. 419, commenting upon a statement to that effect by a leading wholesaler, *C. & D.*, 9/3/1895, p. 352.

tions;[1] manufacturers sometimes protected some but not all of their brands;[2] some adjusted discount terms to be more favourable for smaller retailers, without any price protection;[3] some firms granted special discount terms to retailers who would undertake to advertise and display the brand, without resale price maintenance being introduced;[4] and many manufacturers introduced price protection schemes without effective enforcement and with numerous protestations of the difficulties.[5] But the main type of compromise was for manufacturers to disregard the payment of patronage dividends as a form of price-cutting, despite the protests of the trade that it was an injurious exception to the desired uniformity of retail prices. This compromise was generally adopted until the P.A.T.A., in its momentous decision in 1906, reversed its earlier tolerant attitude.

9

Apart from the advantages flowing from the fact that some (possibly influential) sections of the retail trade favoured price

[1] For example, the proprietors of Beecham's pills, on the initiative of Southampton chemists, introduced price maintenance in that area; the protected margin was low, and the terms had been agreed with an important "cutting" multiple firm, Day's Southern Drug Co., Ltd. (*C. & D.*, 2/10/1897, p. 565). The arrangement was subsequently extended to London after consultations with some of the leading cutters (*C. & D.*, 27/8/1898, p. 383).

[2] The anti-cutting compact of 1896 in the tobacco trade illustrates this and the preceding two types of compromise arrangements. The rates of retail gross margin allowed for in the price schedule were regarded as wholly inadequate by the "legitimate" trade; the terms had been settled only after the manufacturers had adjourned the negotiations with the retail delegates in order to obtain the views of one of the leading "cutting" firms, Salmon and Gluckstein, Ltd.; at first the minimum prices did not apply to the London area; and the compact covered packet tobaccos only, and not cigarettes.

Some patent-medicine manufacturers were members of price maintenance associations or protected the prices of their brands in some other countries but refused to join the P.A.T.A. or to protect prices in England. See *A.C.R.*, September 1900, p. 209, and October 1900, p. 225.

[3] This was done by Sanitas, Ltd., after its poll of trade opinion had been taken (see footnote 3, p. 537).

[4] See discussion, *A.C.R.*, January 1900, p. 45. The P.A.T.A. claimed credit for indirectly bringing about the granting of this and other types of compromise concessions in the chemists' trade.

Special discounts for co-operating retailers were granted by some manufacturers after price maintenance had been adopted. Thus one firm (Gosnell's), which was an original member of the P.A.T.A. though it added its brands to the protected list only in 1898, had special discounts for "special retail agents" who had to undertake "not only to stock, but also to push the sale of . . . [the] . . . specialities in every reasonable way" and "not to substitute or attempt to supply other than . . . [the] . . . specialities when asked for them . . ." (*A.C.R.*, October 1898, p. 241).

[5] This was widespread in the grocery trade, but not confined to it.

protection, there is no evidence that manufacturers believed that uniform retail prices for any one brand carried any other advantages for them. They do not appear to have considered other alleged advantages which to-day are sometimes adduced in favour of price maintenance. For example, they do not appear to have thought that uniformity of retail prices was necessary for the most effective advertising on a national scale; or that uniform prices eased the consumer's shopping tasks and so disposed him favourably towards the product; or that consumers, judging quality by price, tended to look down upon the cut-price brand. Such arguments were not advanced by those promoting the extension of resale price maintenance; [1] and the behaviour and attitude of manufacturers indicate that they, at best, originally regarded price maintenance as an unfortunate restriction sometimes necessary in order to placate influential sections of the retail trade.

The widespread practice of having "advertised prices" for branded goods was in use long before the coming of resale price maintenance; and when resale price maintenance came to be introduced the proprietors frequently stipulated minimum resale prices below the advertised prices, which were still marked on containers and referred to in advertisements.[2] It would seem that the advertised price was put out as an index of the "value" of the product,[3] or an indication of the size of the package, and not as an indication of the price at which it was available to the

[1] Only one reference has been found to this kind of argument in the period under consideration. A correspondent in *The Grocer* observed that he knew of many manufacturers "who do not like their goods priced lower than those of other makers in the same trade, as this causes it to appear that the higher-priced article is the best" (*G.*, 30/6/1888, p. 1207).

[2] In the grocery trade the use of advertised prices in the advertisements of manufacturers appears to have started in the 1860s. In 1868 a correspondent in *The Grocer* complained of the "growing practice among manufacturers of advertising retail prices." It was called an "unfair and unbusinesslike system," because, so it appears, the practice made it difficult for the grocer to charge his customers *more* than the advertised price. The prevention of "over-charging" may have been the original purpose of advertised prices. An editorial, commenting on the letter, conceded the force of the complaint in many cases, but considered that "in the case of specialities uniformity in price is of as much importance as the name of a celebrated maker" (*G.*, 4/1/1868, p. 9). Nevertheless, celebrated manufacturers permitted the retail prices of their goods to be cut far below their advertised prices until the beginnings of the price maintenance movement. Until then there does not appear to have been any effort to adopt more realistic advertised prices or to prevent retail price-cutting.

[3] A wholesale chemist expressed his disapproval of the practice: "They [the public] are deceived into the belief that they are getting 2*s.* 9*d.* worth for 2*s.* 6*d.*, thus making the chemist and other retailer the vehicle for a fraudulent delusion" (*C. & D.*, 8/2/1896, p. 236).

public at retail. In the P.A.T.A. there appears to have been resistance by some manufacturers against equating their minimum and advertised prices. Elliman's Ltd., perhaps the first manufacturers of branded medicines to have had effective resale price maintenance even before the establishment of the P.A.T.A., nevertheless refused to place their brands on the P.A.T.A. list. The head of the firm objected, *inter alia*, to joining hands with manufacturers, some of whom insisted that the " advertised price should be the minimum price. He was of opinion that it was absolutely necessary to allow a discount to cash customers, and he thought that it would be found impossible to insist upon full prices being obtained." [1]

When price maintenance was adopted, manufacturers did not require or insist that their minimum prices should also be maximum prices; [2] though competition tended to bring about this result. Some manufacturer pioneers of price maintenance appear to have envisaged that retail price-cutting of their brands would continue. Their object was merely to prevent what they considered to be excessive cutting, and not to proscribe price competition altogether.[3]

10

Three general tendencies may be discerned in a survey of developments during the period 1885 to 1906. First, the initiative to introduce resale price maintenance did not come from manufacturers, the great majority of whom were reluctant to move in the matter. Secondly, the pace at which the reluctance of manufacturers was overcome depended largely upon the strength of retail organisation. Thirdly, the most effective resistance to the introduction of protected prices came from owners of well-established brands.[4]

[1] *A.C.R.*, July 1896, p. 13.

He indicated, further, that he was unwilling to join the P.A.T.A. list because he would not co-operate with manufacturers " who did not protect the article for which they had the most sale."

[2] Thus W. D. and H. O. Wills, tobacco manufacturers, when publishing their minimum price schedule in 1899 (a continuation, largely, of the low minimum prices agreed by them and five other firms in 1896) stated: " In cases where better prices have been obtained we have no desire that they shall be disturbed, our sole object being to fix prices *below* which no retailer must sell " (*T.T.R.*, March 1899, p. 92).

[3] For example, see letter of Lever Brothers, *G.*, 27/9/1890, p. 513.

[4] The general tendencies were present in the three trades up to 1901; but from 1901 there were changes in the structure of the tobacco-manufacturing industry which broke the continuity of developments in manufacturer–distributor relationships in the tobacco trade. In 1901–2 the American Tobacco Company entered the British market, and its principal British competitors united to form the

Before 1892 few manufacturers were prepared to stop retail cutting of the prices of their brands.[1] There are references in trade journals to the "masterly inaction" of manufacturers.[2] Proprietors of successful brands had had many years of a highly competitive retail market with considerable and sustained price-cutting, in which the severity of price-cutting was a fair index of the popularity of the brand. New brands had been launched in these conditions, and the successful ones had prospered greatly. There is little wonder that some manufacturers "have been inclined rather to encourage cutting than otherwise, in the belief that low prices directly lead to increased consumption." [3]

The manufacturers would not lightly interfere with retail competition or with the supply of their goods to the most successful retail competitors. The risks of any drastic change in marketing policy, and the uncertainty of the response of different groups of retailers and of the consuming public, were sufficiently great for manufacturers to avoid action until the inducements held out to them by retail organisations or the pressure exerted by them could no longer be ignored. Those supporters of resale price maintenance "who expected an immediate capitulation of the great proprietors expected a very foolish thing." [4] Glyn-Jones reported in 1899 that "the negotiations are exceedingly tedious, but we find there is no help for it. The issues for the large firms are very grave, and they are naturally cautious." [5]

Glyn-Jones correctly "emphasised the fact that the size, length and importance of the [P.A.T.A.] protected list would be

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Imperial Tobacco Company. In the struggle between the two large firms to secure or to enlarge their share of the market the value of the sympathy of the "legitimate" trade went up considerably. The trade was wooed in many ways, of which the protection of prices by resale price maintenance was an important one. Moreover, the Imperial Tobacco Company, as one move in the struggle, acquired control of the multiple tobacconists, Salmon and Gluckstein, who had been among the most formidable of price-cutters.

The amalgamation of the American and Imperial interests in 1902 put an end to the duopoly struggle and produced a high degree of concentration with one dominant firm in the industry. The firm continued maintaining resale prices. The scope of this article does not make it possible to attempt to trace the development of the dominant firm's marketing policy and the role of resale price maintenance after 1902.

[1] There were few exceptions. The important pioneers appear to have been Elliman's, Ltd. (medical preparations), Blondeau et Cie (toilet preparations) and Lever Brothers (Sunlight soap).

[2] *E.g.*, editorials in *G.*, 16/8/1890, p. 280, and in *T.T.R.*, August 1895, p. 273.

[3] Editorial, *T.T.R.*, June 1889, p. 155.

[4] Editorial on first protected list of P.A.T.A., *C. & D.*, 25/7/1896, p. 124. See also editorials, *G.*, 24/6/1893, p. 1386, and 7/9/1893, p. 518.

[5] *G.*, 21/1/1899, p. 143.

almost in direct proportion to the support given to the movement by retailers." [1] He himself in 1896–97 conducted what was aptly called an anti-cutting crusade in the chemists' trade as well as in the grocery trade; and a similar country-wide tour to solicit support for the tobacconists' organisation was made by its sponsors in 1900–1. The more conspicuous gatherings of retail traders and their demonstrations in favour of price maintenance were apt to convert wavering manufacturers. The Grocery Exhibition of 1896 is said to have persuaded several manufacturers to introduce price maintenance.[2] In 1902 the P.A.T.A. convened a conference which was attended by delegates from forty-four local chemists' associations. A strong resolution in favour of the P.A.T.A. method of securing retail profits was carried. "The result has been that since the conference about fifty proprietors have joined the association, some of them representing articles of largest sale." [3]

The proprietors of well-established brands were least susceptible to the inducements and pressures of organised retailers. New brands tended to be price maintained from the outset once retail demands for protection were well organised; but the owners of popular lines were more cautious and even defiant. The P.A.T.A. in 1901 regretted that "more articles of prime importance have not been included in the list [of protected articles], but it is a matter of satisfaction to note that new proprietaries, as they come out, are placed on the list." [4]

The reasons for the particularly strong disinclination of owners to place well-known brands under price maintenance are clear. An importer who believed in the wisdom of price maintenance had to concede that this did not apply to the "mammoth advertisers who claim to create such a demand for their brands that retailers must keep them, and who consequently think it unnecessary to consider the retailing interest." [5] It was not easy for retailers to substitute other brands for brands whose names were household words; any retailer who attempted to boycott such brands would merely have driven customers away from his

[1] *C. & D.*, 23/1/1897, p. 118.

[2] Statement by John Williams, *G.*, 10/2/1900, p. 366.

[3] *P.A.T.A. Yearbook*, 1904, pp. 22–3.

[4] Report of P.A.T.A. in *G.*, 20/7/1901, p. 143. For the grocery trade, see John Williams' remarks, *G.*, 10/2/1900, p. 366, and Glyn-Jones's remarks, *G.*, 19/10/1901, p. 928.

[5] Managing director of Australian Wine Importers, Ltd., *G.*, 18/10/1890, p. 662.

An editorial in *Advertising* (May 1903, p. 599) noted that "not one of the largest advertising concerns is among the manufacturing members of the P.A.T.A."

establishment. Advertisements, which warned against substitution, were not uncommon.[1] Moreover, manufacturers were loath to disturb low prices and channels of distribution which had been established for long periods.[2] On the other hand, the owner of a new brand could select his methods of distribution and his retail price without having to interfere with existing arrangements; and he was more dependent upon the goodwill of substantial sections of the retail trade.

The policy of Bovril, Ltd. provides a useful illustration of the operation of the forces described in this section. This firm produced various products, some of which were sold mainly by chemists and others mainly by grocers. None of its products appears to have been protected before the establishment of the P.A.T.A. The P.A.T.A. was originally intended to cover both branches of the retail trade; but in fact its support came almost wholly from chemists. Bovril, Ltd. placed its chemists' trade line, Invalid Bovril, on the P.A.T.A.'s first protected list; but it did not introduce price maintenance for its predominantly grocery line, Bovril, at the same time. The reason for this differential treatment was "that they would not put the other in the [protected] list until the grocers took the matter up themselves."[3] Requests for protection from grocers or local associations met with the reply that price-cutting was "solely due to the short-sighted policy of the retailers themselves" and that no scheme of price protection was "free from dangers or difficulties."[4] Later the firm explained that it could not protect its prices because the grocery trade as a whole had not made up its mind.[5] Finally, in 1901, price protection was introduced for the grocery line, after representations had been made by several active local grocers' associations.[6] In the meantime the firm had added a

[1] The proprietors of Beecham's pills issued an advertisement warning the public "if an effort is made by any retailer to induce them to take any other remedy when Beecham's Pills have been asked for—that the article offered as a substitute invariably carries more profit, and will not give the same satisfaction to the purchaser" (*A.C.R.*, December 1898, p. 23).

[2] The strength of the position of well-established brands was recognised by the P.A.T.A. at an early date. From 1898 well-known brands were admitted on the protected list even though they carried lower margins of retail gross profit than that originally laid down as a minimum. Sometimes further concessions were made.

[3] According to Glyn-Jones, *G.*, 9/1/1897, p. 76.

[4] Letter of Bovril, Ltd., *G.*, 20/3/1897, p. 738.

[5] Letter from Bovril, Ltd. to a grocers' association, quoted in *G.*, 16/9/1899, p. 698.

[6] See, for example, report of Birmingham Grocers' Association, *G.*, 27/7/1901, p. 234.

"new nutritive," Virol, to the P.A.T.A. list in 1899 at the time of its appearance on the market.[1]

II

This study of the formative years of resale price maintenance in selected branches of the retail trade points to conclusions, some of which are at variance with views which are sometimes advanced in present-day discussions. It may be useful, therefore, to couch these conclusions, where relevant, in terms of the language of controversies of to-day.

Before the introduction of resale price maintenance retail price competition was intense. The price-cutters were not ephemeral intruders temporarily upsetting the retail market; they included substantial firms, many of which have survived to this day. The movement for price maintenance grew out of the dangers which price-cutting firms and their successful price policies presented to the profits and existence of large numbers of retailers employing traditional methods of doing business. It was in origin a retailers' movement designed to preserve (or even to enlarge) the share of the retail market served by the threatened group of retailers and to improve the profitability of that share. Its object was to prevent competitors from using the offer of low prices in the competitive struggle for business, and its method was to induce manufacturers by persuasion, organised threats and by offers of support to introduce and to enforce minimum retail prices for branded goods.

The retail price competition, which organised retailers sought to remove, was not considered by the owners of branded goods to have been prejudicial to their interests. Manufacturers were reluctant to obstruct price-cutting. The adoption of resale price maintenance was not the inevitable or indispensable adjunct of the policy of branding and advertising. The persuasion of manufacturers to the point of view that it was in their interests to protect retail prices was a slow and difficult process, in which the strength of retail sentiment and organisation in favour of the practice appears to have been among the decisive considerations. Manufacturers protected prices not because of the "damage" their brands suffered at the hands of price-cutting retailers; they appear to have done so because of the reactions of the numerous retailers who disliked the results of price competition.

Some present-day advocates of resale price maintenance con-

[1] *A.C.R.*, May 1899, p. 131.

tend that retail price competition produces "chaos" and "instability" in retail markets, which are harmful to consumers. However, there is no evidence that, before the introduction and spread of resale price maintenance, consumer interests were injured and not promoted by the prevailing competition. It was because consumers showed their appreciation of low prices by supporting the price-cutting retailers that the competitors of the latter wished to have resale prices protected. For the same reason manufacturers were not eager to raise the prices of their brands or interfere with the business policies of successful retailers.

B. S. YAMEY

London School of Economics.

A GRAPHICAL ANALYSIS OF THE FOREIGN TRADE MULTIPLIER

THE determination of the equilibrium level of National Income, in a closed economy, is usually illustrated by means of the now familiar "45°-diagram," in which the sum of Consumption, Investment and Government outlays is plotted against National Income, equilibrium National Income being indicated by the intersection of the $(C + I + G)$ curve with the 45° line. This diagram (or its equivalent, the Savings–Investment diagram), although very useful for illustrating such matters as the multiplier effect of any change in expenditure upon National Income, cannot so conveniently be employed once the assumption of a closed economy is dropped, since "foreign repercussion" effects are difficult to handle. In such cases resort is usually had to algebraic or arithmetic models.[1] Such models, often of necessity lengthy, sometimes lack the quality of presenting in brief compass the essence of the problem. The object of this paper is to discuss a simple diagram which can be applied to two-country models and which is very convenient for illustrating multiplier effects and resulting changes in the balance of trade.[2]

I

The following model assumes that there are only two countries in the world, that their propensities to consume and to import are linear, that domestic Investment does not respond to any changes in National Income and that changes in prices, interest rates and exchange rates do not occur. For the most part, these are the customary assumptions in simple income-determination models, and only a few comments thereon seem warranted. The two-country assumption may, of course, be reinterpreted as an assumption of one country and "the rest of the world"—a variant that may or may not be satisfactory, depending on the particular problem that is to be approached. The linear-pro-

[1] Such models have been employed by a number of writers, notably Fritz Machlup, *International Trade and the National Income Multiplier* (Blakiston, Philadelphia, 1943) and Lloyd A. Metzler, "The Transfer Problem Reconsidered," *Journal of Political Economy*, Volume L, June 1942, pp. 397–414, reprinted in *Readings in the Theory of International Trade* (Blakiston, Philadelphia, 1949), pp. 179–97.

[2] I am indebted to Professors P. A. Samuelson and C. P. Kindleberger for comments with respect to the presentation of this material.

pensities assumption seems in particular reasonable when one is concerned with deviations from a previous equilibrium level, so that the linear movement is a good approximation to whatever more complex function is truly applicable, provided the deviation is not excessively large. The assumption of invariant domestic Investment will be dropped in Section IV.

Given these assumptions, then the incomes earned in each of the two countries can be expressed as follows:

$$Y_1 = (a_1 + h_1 Y_1) + (b_2 + m_2 Y_2) + I_1 \quad . \quad . \quad (1)$$
$$Y_2 = (a_2 + h_2 Y_2) + (b_1 + m_1 Y_1) + I_2 \quad . \quad . \quad (2)$$

Given fixed exchange rates, these magnitudes can be expressed in terms of the currency of either country. The first two terms to the right of the equality sign in each equation signify incomes earned in production of consumption goods for home use (the propensity to consume home-goods). The hs are the marginal propensities to consume such home-goods. The subscripts indicate whether they are applicable to Country 1 or Country 2. The next two terms on the right-hand side signify incomes earned through exports (the other country's propensity to import); the ms are marginal propensities to import. Country 2's imports comprise Country 1's exports; as exports they appear in the earnings of Country 1, although the subscript indicates the origin of this function in the behavior-pattern of the other country. The final right-hand term in each case stands for incomes earned through domestic Investment. For convenience, no Governmental expenditure has been included; it may be regarded as included with domestic Investment, if desired.

Setting aside for the moment the values of the marginal propensities required for stability, the significance of each equation must be summarised. The level of income in, say, Country 2 depends on the magnitude of several elements: (i) the autonomous elements, a_2, b_1 and I_2; (ii) the marginal propensity to consume home-goods; (iii) the national income, Y_1, in the other country, and (iv) the other country's marginal propensity to import. If fixed values are assigned to the marginal propensities, then national income in Country 2 may rise for either of two reasons. First, one of the autonomous elements may shift; domestic Investment may rise, its own consumption function may rise or the other country's import function may rise. Second, the income in the other country—Country 1—may rise, a rise relayed to Country 2 via $m_1 Y_1$. Similarly, any fall in Y_2 must be occasioned by a fall originating in one of these two sources. And any

initial change in Y_2 will have multiplier effects; this induced change in consumption will magnify the initial change in value.

With specific values assigned to the autonomous elements and marginal propensities, equations (1) and (2) become two linear equations in Y_1 and Y_2 such as those illustrated in Fig. 1. The flatter of these two curves is equation (2); it may be regarded as $Y_2(Y_1)$, since once the amount of Country 2's exports $(b_1 + m_1 Y_1)$ is known, the equilibrium value of Y_2 can be determined; but to know these exports, Y_1 must be known. The intersection of the two curves signifies, of course, a pair of equilibrium values that will satisfy *both* equations.

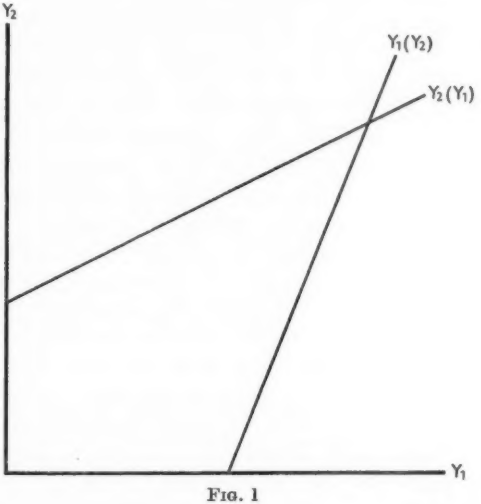

FIG. 1

In the succeeding analysis attention is focused upon the $Y_2(Y_1)$ function (*i.e.*, upon the income level in Country 2), simply because it seems easier for the eye to follow; but the qualitative symmetry between the two equations means that the results can be applied to either.

If a value of Y_1 be selected arbitrarily, without regard for the restrictions imposed by equation (1), the $Y_2(Y_1)$ function will yield the resulting equilibrium value of Y_2, with full allowance for all multiplier effects. This equilibrium value is the sum of earnings from the sale of exports, investment goods and home-purchased consumption goods. The expenditure on consumption goods may be broken into two sub-categories: (i) " autonomous " consumption spending, a_2, spending that would persist even with a zero

Y_2,[1] and (ii) "induced" consumption spending, spending attributable to the multiplier effects of exports, investment and autonomous consumption. This may be illustrated by the following simple re-arrangement of equation (1):

$$Y_2 = \underset{\text{(i)}}{(a_2 + I_2)} + \underset{\text{(ii)}}{\frac{h_2}{1-h_2}(a_2 + I_2)} + \underset{\text{(iii)}}{(b_1 + m_1 Y_1)} + \underset{\text{(iv)}}{\frac{h_2}{1-h_2}(b_1 + m_1 Y_1)} \quad (3)$$

This re-arrangement shows the composition of Y_2 more clearly as: (i) the sum of "autonomous" home consumption and

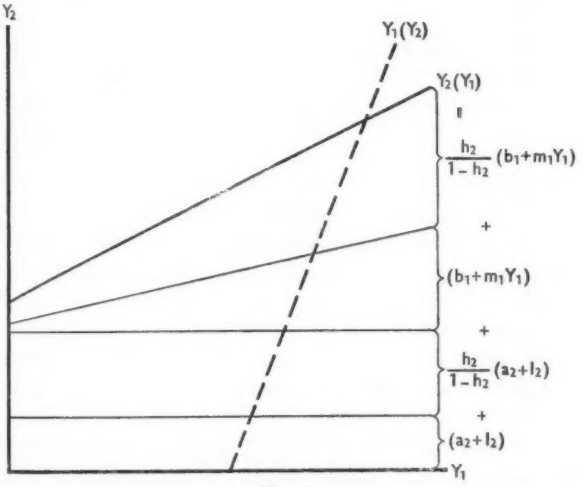

FIG. 2

investment expenditure and earnings; (ii) induced consumption resulting from the earnings of (i); (iii) export earnings, and (iv) induced consumption resulting from the earnings of (iii).[2]

Fig. 2 shows the division of Y_2 into its constituent elements as a series of "slabs," stacked one upon the other, whose total

[1] Such a low value would, of course, be "non-operational"; if desired, one may think of all incomes as being measured from some arbitrary positive level.

[2] The coefficient $h_2/(1-h_2)$ preceding the two induced-consumption items is not the full "domestic" multiplier, since this full multiplier reflects the sum of the autonomous item and its induced effect. *E.g.*:

$$(a_2 + I_2) + \frac{h_2}{1-h_2}(a_2 + I_2) = \frac{1}{1-h_2}(a_2 + I_2).$$

height is the $Y_2(Y_1)$ function. When $Y_1 = 0$, the expression $m_1 Y_1$ vanishes, although "autonomous" exports of b_1 would persist [1] and would have induced-consumption effects. As Y_1 rises from zero, there is a direct effect on Y_2, of value $m_1 Y_1$, and a further induced-consumption effect of $h_2/(1 - h_2)$ times this magnitude.

With this preliminary survey completed, it becomes possible to illustrate the effects of changes in the autonomous terms. Suppose, for example, that I_2 is increased by some amount, ΔI_2. The $(a_2 + I_2)$ slab of Fig. 2 will rise by the same amount; but

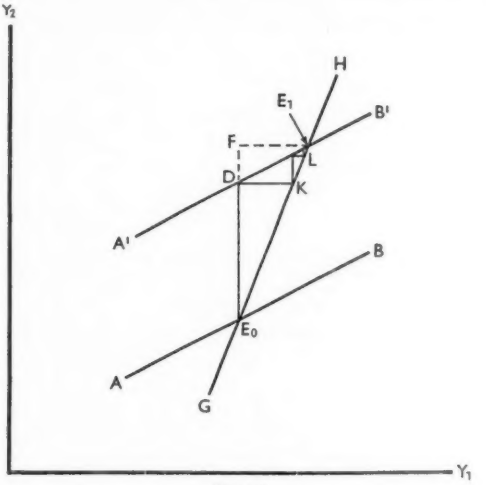

FIG. 3

since this autonomous rise will have multiplier effects, the slab immediately above will gradually rise by $h_2/(1 - h_2)$ times this amount. Hence the $Y_2(Y_1)$ function will be thrust vertically upward by an amount $1/(1 - h_2)\,\Delta I_2$.

Fig. 3, an enlargement of the area around the intersection, shows the results more clearly. E_0D is the vertical rise in $Y_2(Y_1)$. It is the final increase in Y_2 that one would predict if one applied the domestic multiplier formula, $1/(1 - h_2)$. But due to the "tilt" of GH, the $Y_1(Y_2)$ function, this is not the correct answer. The new intersection is E_1, and the final rise in Y_2 is E_0F, not simply E_0D. DF is, of course, the "foreign repercussion" effect; as Y_2 rises, Country 2's imports rise; this means a rise in Y_1

[1] This also would be a "non-operational" value similar to that mentioned in footnote 1 on p. 549.

and increased imports from Country 2, giving a further upward push to Y_2—and so forth. This dwindling to-and-fro movement is an asymptotic approach to the position E_1.

The autonomous increase in Country 2's expenditure thus raises incomes in both countries. There is more than one multiplier to be considered; in fact, there are four:

(1) Country 2's "direct-multiplier": the increase in Y_2 that results from an increase in autonomous spending *in Country* 2—indicated by E_0F in Fig. 3.

(2) Country 1's "cross-multiplier": the increase in Y_1 that results from such an increase in autonomous spending *in Country* 2—indicated by FE_1 in Fig. 3.

(3) Country 1's "direct-multiplier": the rise in Y_1 attributable to any rise in its own autonomous expenditure.

(4) Country 2's "cross-multiplier": the rise in Y_2 attributable to the change in autonomous spending described in (3).

But the use of a diagram such as Fig. 3 makes it relatively easy to develop a generalised foreign-trade multiplier which reflects both direct and cross effects, and hence is applicable to any combination of shifts in the autonomous elements—including that developed at length by Machlup,[1] where the rise in $Y_2(Y_1)$ is accompanied by a fall (leftward shift) in $Y_1(Y_2)$—*i.e.*, where Country 1 expands its purchases from Country 2, curtailing purchase of its own commodities by the same amount. This matter is discussed in Section II.

No mention has yet been made of the conditions for stability. Unless suitable values are attributed to the four marginal propensities, there is no assurance: (i) of an intersection of the two curves; (ii) of an intersection in the north-east quadrant, yielding positive equilibrium values for the two Ys, or (iii) of an intersection promising a stable equilibrium.

In Figs. 1 and 3, in addition to intersecting in the north-east quadrant: (i) both curves have positive slope, and (ii) the slope of $Y_1(Y_2)$ exceeds that of $Y_2(Y_1)$. These are the requirements for stable equilibrium. If, *e.g.*, a non-equilibrium value of Y_1 be selected at random, these diagrams indicate that the Y_2 resulting, the Y_1 that would follow from such a Y_2 and so on will follow a path leading toward, rather than away from, the intersection. Behind these permissible slope requirements stand, of course, the

[1] *Op. cit.*

permissible values of the four marginal propensities if stable equilibrium is to be assured [1]:

(i) It is arbitrarily assumed that no marginal propensity has a negative value. To admit such values would render a summary of the stability conditions more difficult; the possibility, which would indicate that home-goods, or import-goods, are collectively deemed inferior, seems sufficiently remote to be dismissed.

(ii) Each of the marginal propensities to consume home-goods must have values below 1. The instability inherent in a greater-than-1 value is illustrated by the fact that the domestic multiplier would then have a negative value—*i.e.*, static analysis could not be relied upon for meaningful results. This restriction assures that both curves will have positive slope.[2] If, *e.g.*, h_2 were to exceed 1, the $Y_2(Y_1)$ curve would have negative slope and would not pass through the north-east quadrant at all unless one of the autonomous elements, such as b_1, were to be negative and sufficiently large in absolute value. Even if $Y_2(Y_1)$ were to cut across this quadrant so as to intersect $Y_1(Y_2)$, the intersection would not be stable. Thus if Y_2 were to rise above its equilibrium value, the greater-than-1 marginal propensity to buy home-goods would push it still higher, and increasing imports from Country 1 would drag Country 1's income up also.

(iii) These assumptions (no negative marginal propensities, both hs below 1) assure positive slope for both curves, but they do not assure that the two will converge in the north-east quadrant.[3] A further assumption is necessary: that $(1 - h_1)(1 - h_2) - m_1 m_2$ exceed zero.[4] This condition will be satisfied if both countries are "stable in isolation"—*i.e.*,

[1] For a thorough survey of the stability conditions, see Lloyd A. Metzler, "Underemployment Equilibrium in International Trade," *Econometrica*, Vol. 10, No. 2, April 1942, p. 97.

[2] The slope of $Y_2(Y_1)$ is $m_1/(1 - h_2)$. With negative values of m_1 barred, the slope of this function will thus be positive or negative, depending on whether h_2 is less than or greater than 1 in value. Similar analysis applies to $Y_1(Y_2)$, whose slope is $(1 - h_1)/m_2$.

[3] Strictly, even these requirements do not assure that the intersection will occur *within* the north-east quadrant; but the curves will so intersect if, for Country 2, $(a_2 + b_1 + I_2)$ exceeds zero (and similarly for Country 1). Again, the likelihood of this condition not being fulfilled seems sufficiently remote for dismissal.

[4] This follows if the slope of $Y_1(Y_2)$ is to exceed that of $Y_2(Y_1)$; for the values of these slopes see footnote 1 above. The expression above is the determinant of the two equations.

if both have positive " marginal propensities to save."[1] It cannot be satisfied if both are " unstable in isolation." It may be satisfied if one country is " unstable," provided a proper relationship between the marginal propensities to import and to save exists.[2] The interesting case in which one country is thus unstable is considered in Section IV.

Sections III and IV illustrate diagrammatically the trade balance and effects thereon caused by shifts in autonomous expenditure. Section II discusses a generalised foreign-trade multiplier—possibly a matter of less interest than that of the trade balance. If desired, Section II may be skipped without loss of continuity.

II

The literature abounds in foreign-trade multipliers; in fact, one complaint might be that there are already too many of them. Machlup, for instance, presents three different multipliers,[3] whose applicability depends on the nature of the initiating movement. Yet in all cases the multiplier effect is simply one resulting from the interplay between domestic multipliers, and it is not difficult to devise a general formula—although strictly static—which employs the domestic multiplier as its fundamental building block and which is applicable to any combination of shifts in autonomous elements.

Fig. 3 illustrated a change in the equilibrium position, E, initiated by a rise in Investment in Country 2. The same result would occur from (i) an upward shift of Country 2's home-goods consumption function (a rise in a_2), or (ii) an upward shift in Country 1's import function (a rise in b_1), not accompanied by any shift in Country 1's home-goods consumption function. Call this autonomous rise in expenditure (and hence earnings) in Country 2, however occasioned, $\Delta E x_2$.

The rise in Y_2 predicted by the domestic multiplier, E_0D, falls short of the true rise, DF. But DF results from a series of steps from E_0 to E_1: from E_0 to D, from D to K, from K to L and so on. Each vertical movement constitutes a rise in Y_2 and each horizontal movement a rise in Y_1. The complete ΔY_2 is made

[1] Alternatively, " stability in isolation " means, for Country 1, that $(h_1 + m_1)$ be less than 1 in value; and similarly for Country 2.

[2] Condition (iii) may alternatively be expressed as $s_1 > -s_2 \frac{m_1 + s_1}{m_2}$, where the ss are MPs to save; this shows the needed relationship more clearly.

[3] *Op. cit.*, p. 128.

up of $E_0D + KL +$ a series of smaller vertical movements too small to be indicated in Fig. 3. But this is a simple convergent geometric series.[1] ΔY_1 is correspondingly the sum of the horizontal movements, beginning with DK, also a convergent geometric series. In fact, the two series are remarkably similar, for the common term is the same for both, and the first terms differ only by a simple multiple.

Using only simple algebra, it can easily be shown[2] that

[1] The series will converge only if the earlier-mentioned condition, that the expression $(1 - h_1)(1 - h_2) - m_1m_2$ exceed zero, is satisfied.

[2] E_0D is, by definition, $\Delta Ex_2 \frac{1}{1 - h_2}$. This rise in Y_2 will result in increased imports from Country 1, with a value m_2 times the increase in Y_2. This is an increase in earnings for Country 1; after allowing for domestic multiplier effects, the response in Y_1 will be $\frac{1}{1 - h_1}$ times the initial increase. That is to say, the first rise in Y_1—the amount indicated by DK in Fig. 3—will be :

$$\Delta Ex_2 \frac{1}{1 - h_2} \times m_2 \frac{1}{1 - h_1}.$$

(This value of DK may be verified by another route. The slope of GH, the $Y_1(Y_2)$ function, is E_0D/DK. But we know this slope; it is $(1 - h_1)/m_2$. We also know E_0D; hence we can solve for DK, the result being the expression above.)

We now have a rise in Y_1. Via the same route of increased imports from Country 2, and 2's domestic multiplier, this will further raise Y_2 by an amount $m_1/(1 - h_2)$ times the rise in Y_1; this is KL in Fig. 3. This new rise in Y_2 occasions a still further rise in Y_1 and so on. The increases are summarised in the table below.

	Changes in Y_2	*Changes in* Y_1
1st step :	$E_0D = \Delta Ex_2 \frac{1}{1 - h_2}$	$\Delta Ex_2 \frac{1}{1 - h_2} m_2 \frac{1}{1 - h_1}$
2nd step :	$\Delta Ex_2 \frac{1}{1-h_2} m_2 \frac{1}{1-h_1} m_1 \frac{1}{1-h_2}$	$\Delta Ex_2 \frac{1}{1-h_2} m_2 \frac{1}{1-h_1} m_1 \frac{1}{1-h_2} m_2 \frac{1}{1-h_1}$
	. . .	. . .
nth step :	Entry in step $(n - 1)$, multiplied by $m_2m_1 \frac{1}{1 - h_1} \cdot \frac{1}{1 - h_2}$	Entry in step $(n - 1)$, multiplied by $m_2m_1 \frac{1}{1 - h_1} \cdot \frac{1}{1 - h_2}$

The *total* changes in Y_2 and Y_1, ΔY_2 and ΔY_1 are obtained by summing vertically all of the changes above. These sums may be obtained by applying the formula for a convergent geometric progression; the results are equations (4) and (5).

It must be emphasised that the "step" sequence thus traced out is *not* the path that would result from applying dynamic-period analysis; the preceding allows the domestic multiplier to work itself out fully before allowing for *any* rise in imports; this import rise is then taken collectively. The dynamic path, as Machlup points out (*op. cit.*, p. 77), would occasion interlocking geometric progressions.

the relationships between the ΔYs and ΔEx_2 are as follows:

$$\Delta Y_2 = \Delta Ex_2 \frac{1}{1-h_2} \cdot \frac{(1-h_1)(1-h_2)}{(1-h_1)(1-h_2)-m_1m_2} \quad . \quad (4)$$

$$\Delta Y_1 = \Delta Ex_2 \frac{m_2}{(1-h_1)(1-h_2)-m_1m_2} \quad . \quad . \quad . \quad (5)$$

Transferring the ΔEx_2 term to the left-hand side, equation (4) becomes Country 2's "direct-multiplier," and equation (5), Country 1's "cross-multiplier."

These formulæ do not take account of the case discussed at some length by Machlup in *International Trade and the National Income Multiplier*, where the rise in $Y_2(Y_1)$ is accompanied by a fall (leftward movement) in $Y_1(Y_2)$. Country 1 increases its imports from 2, but curtails its purchases of home-goods by the same amount. The formula can readily be adapted to fit this more involved case.

For simplicity, call Country 2's "direct-multiplier"—the expression in (4)—D_2. Call Country 1's "cross-multiplier"—the expression in (5)—C_1. The two remaining multipliers will accordingly be D_1 (the rise in Y_1 occasioned by any increase in autonomous expenditure in Country 1) and C_2 (the rise in Y_2 occasioned by such an increase in expenditure *in Country* 1). The formulæ for D_1 and C_2 can readily be obtained. It will be noted that D_2 is simply Country 2's domestic multiplier, itself multiplied by a further expression which is slightly greater than 1 in value and which is symmetrical with respect to the appearance of the two countries' marginal propensities therein. D_1 is accordingly the same expression, save that the domestic multiplier prefix is $1/(1-h_1)$, rather than $1/(1-h_2)$. Similarly, C_2 is the same as C_1, but with m_1 substituted for m_2 as numerator.

Fig. 4 illustrates the case in which Country 1 substitutes imports for home-goods, and also the four multipliers. The increase in 2's exports thrusts $Y_2(Y_1)$ upward from AB to $A'B'$, as before; but the equivalent cut in 1's domestic purchases moves $Y_1(Y_2)$ "down"—*i.e.*, leftward—from GH to $G'H'$. The upward and leftward movements will not be of the same magnitude, unless each country's domestic multiplier happens to be the same. Assuming the initial shift in purchases to be \$1, then the vertical and horizontal distances marked show the magnitude of the four multipliers as dollar quantities.

The total multiplier effects show up at once. Y_2 is thrust upward by the autonomous rise in its own expenditure, but there

is a partially compensating downward movement resulting from the reduction in Country 1's autonomous expenditure. The net effect upon Y_2 is accordingly $\$1(D_2 - C_2)$. Similarly, the net effect upon Y_1 is $-\$1(D_1 - C_1)$. Where both functions shift,

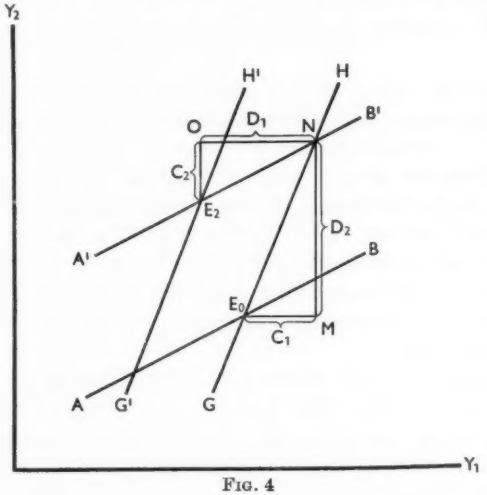

FIG. 4

the complete multiplier effect is simply the sum of the direct- and cross-multiplier effects. More generally :

$$\Delta Y_2 = \Delta Ex_2 D_2 + \Delta Ex_1 C_2 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (6)$$

$$= \Delta Ex_2 \frac{1}{1-h_2} \cdot \frac{(1-h_1)(1-h_2)}{(1-h_1)(1-h_2) - m_1 m_2} + \Delta Ex_1 \frac{m_1}{(1-h_1)(1-h_2) - m_1 m_2} \quad (7)$$

$$\Delta Y_1 = \Delta Ex_1 \frac{1}{1-h_1} \cdot \frac{(1-h_1)(1-h_2)}{(1-h_1)(1-h_2) - m_1 m_2} + \Delta Ex_2 \frac{m_2}{(1-h_1)(1-h_2) - m_1 m_2} \quad (8)$$

Or, following Machlup's practice in changing the subscripts to d (domestic) and f (foreign), the generalised foreign-trade multiplier formula is indicated by : [1]

$$\Delta Yd = \Delta Ex_d \frac{1}{1-h_d} \cdot \frac{(1-h_d)(1-h_f)}{(1-h_d)(1-h_f) - m_d m_f} + \Delta Ex_f \frac{m_f}{(1-h_d)(1-h_f) - m_d m_f} \quad (9)$$

Where there is no change in autonomous earnings and expendi-

[1] See footnote on p. 557.

ture abroad, the second term on the right-hand side vanishes; where there is no change in autonomous expenditure at home, so that there is only a "cross-multiplier" effect to consider, the first term on the right-hand side vanishes.[1] This formula will accommodate also the case in which there are autonomous changes in expenditure both at home and abroad, but of unequal amount.

III

There is, of course, no presumption that the equilibrium position indicated by intersection of the two Y-functions will be one in which trade is just balanced between the two countries. The requirement for a zero trade balance is that:

$$(b_1 + m_1 Y_1) - (b_2 + m_2 Y_2) = 0 \quad . \quad . \quad . \quad (10)$$

This is a linear equation involving Y_1 and Y_2, shown as AB in Fig. 5. If the equilibrium point should happen to land on AB, trade will balance; otherwise it will not. But there is a family of trade-balance lines, infinite in number, each signifying a particular "favourable" balance (positive or negative) from Country 2's standpoint. With K signifying the amount of this balance, the equation is:

$$(b_1 + m_1 Y_1) - (b_2 + m_2 Y_2) = K \quad . \quad . \quad . \quad (11)$$

Each family member has the same slope as that of the zero-balance line. When K is positive (*i.e.*, when Country 2 has a positive favourable balance), the line will lie to the right of AB; when K is negative, to the left. CD and EF in Fig. 5 show two such trade-balance lines. The equilibrium point will lie on one

[1] This formula can be related to Machlup's three multipliers (*op. cit.*, p. 128):

(i) His "Foreign-induced Change in Export" multiplier is simply the domestic multiplier.

(ii) His "Autonomous Change in Home Investment" multiplier is the generalised formula above, where $\Delta E_f = 0$.

(iii) His "Autonomous Change in Export or Import" multiplier is again the generalised formula, where $\Delta E_i = \Delta E_d$.

For another presentation of the generalised multiplier, see John S. Chipman, "The Generalized Bi-System Multiplier," *Canadian Journal of Economics and Political Science*, Vol. 15, May 1949, p. 176, which discusses the subject much more fully. The building-blocks of this multiplier are the marginal rates of change in the trade balance and in excess savings. A summary translation, more easily related to the formula above, is in D. B. Marsh's *World Trade and Investment* (Harcourt Brace, New York, 1951), p. 262. This translation of the Chipman formula uses the term R', the "marginal propensity to spend back," originally developed by Lange. In terms of the above, $R' = m_2/(1 - h_2)$. When so defined, this formula corresponds to that presented herein.

The Chipman–Marsh formulæ take explicit account of a positive marginal propensity to invest. h_1 and h_2 above must then be regarded as the *sum* of the *MP*s to buy home-consumption and home-investment goods.

such line; the actual trade balance is the accompanying K-value.

It is not difficult to show what will happen to the trade balance if, say, autonomous investment in Country 1 were to be increased. The $Y_1(Y_2)$ function shifts to the right; the new intersection occurs farther to the right on $Y_2(Y_1)$, landing on a new trade-balance line. In the "normal" case one would expect this event to exert a "favourable" effect upon Country 2's trade balance; this expectation will be fulfilled *provided* the rightward movement along $Y_2(Y_1)$ meets trade-balance lines that are successively farther to the right of AB. But if the slope of the

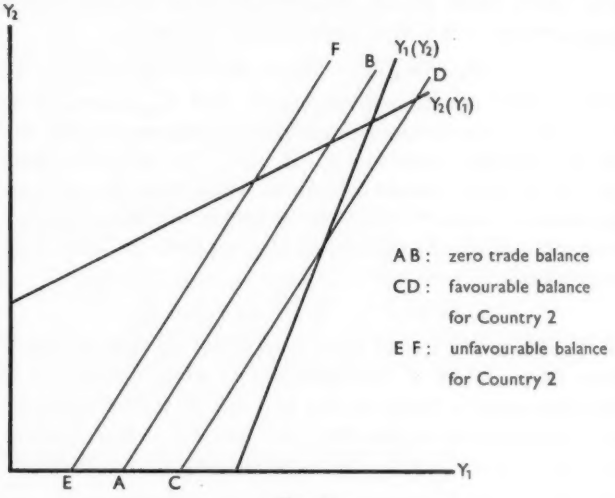

FIG. 5

trade-balance family is less than that of $Y_2(Y_1)$, as in Fig. 6, then the reverse will be true. The condition for such an "abnormal" effect is that the "marginal propensity to save" in Country 2 be negative.[1]

Actual export and import totals, and the difference between them, may be illustrated by another expansion of the basic diagram—still utilising the case where domestic investment rises in Country 1. $Y_2(Y_1)$, as Fig. 2 illustrated, is composed of a series of slabs, one of which comprises exports. In Fig. 7

[1] The slope of all members of the trade-balance family is m_1/m_2. Hence for the "normal" effect to prevail, it is necessary that

$$\frac{m_1}{m_2} > \frac{m_1}{1 - h_2}$$

the right-hand term being the slope of $Y_2(Y_1)$.

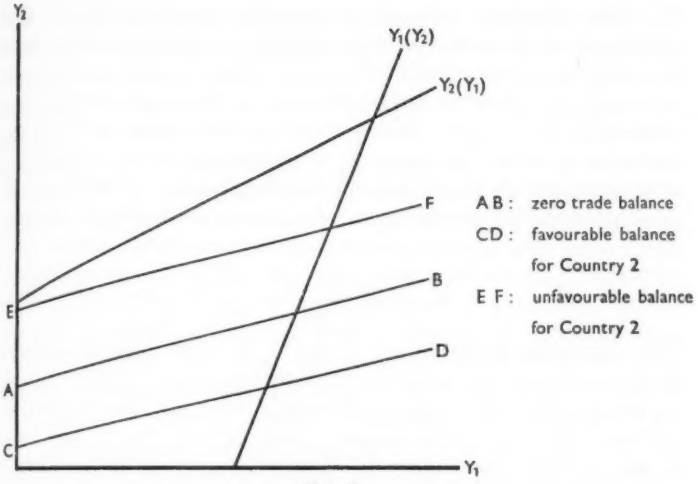
Y2
Y1(Y2)
Y2(Y1)
F
B
E
D
A
C
Y1
AB: zero trade balance
CD: favourable balance for Country 2
EF: unfavourable balance for Country 2

FIG. 6

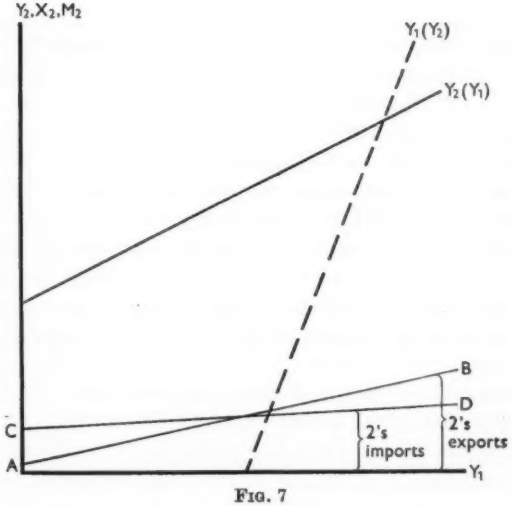
Y2,X2,M2
Y1(Y2)
Y2(Y1)
B
D
C
2's imports
2's exports
A
Y1

FIG. 7

this export-slab is given the bottom position—*i.e.*, the vertical distance to AB measures Country 2's exports at different levels of Y_1; this, of course, is simply Country 1's import function. But Country 2's *imports* may also be shown as a vertical distance from the horizontal axis. For appearance on Fig. 7, and for comparison with exports, they must be shown as a function of Y_1. The expression $(b_2 + m_2 Y_2)$ shows them as a function of Y_2; but the basic equation (2) shows Y_2 as a function of Y_1. Hence by re-arrangement of equation (2), an expression in Y_1 may be substituted for Y_2 in the import function $(b_2 + m_2 Y_2)$. Country 2's imports then appear as :

$$M_2 = b_2 + m_2 \left(\frac{a_2 + b_1 + I_2}{1 - h_2} + \frac{m_1}{1 - h_2} Y_1 \right) . \quad . \quad (12)$$

This expression is shown as CD in Fig. 7. The vertical distance between AB and CD indicates the trade balance. From Country 2's standpoint, this balance is favorable when AB lies above CD, unfavorable when it lies below. Like Fig. 5, Fig. 7 has been drawn to show the "normal" case, wherein rises in Y_1 always tend to improve Country 2's trade balance. The same condition for appearance of this effect applies : that the sum of Country 2's marginal propensities to spend be less than 1.

IV

The argument that a rise in Country 1's autonomous expenditure might turn the trade balance *against* Country 2 has been put forward by C. P. Kindleberger and has been the subject of some exchanges in the literature.[1] This final section is concerned with the likelihood of such an effect, and its diagrammatic illustration.

Thus far it has been assumed that domestic Investment does not respond to any shift in National Income. If this assumption be accepted as a "likely" occurrence, then one is intuitively disposed to reject the possibility of what is likely to be known as the "Kindleberger effect." For it would imply that the marginal propensity to consume (the sum of the home-goods and import propensities) exceeds 1. At least such behavior would not be expected of, say, a Marshallian consumer; at least the Kindleberger case seems rather improbable.

This assumption regarding Investment is not necessarily valid.

[1] See C. P. Kindleberger, "International Monetary Stabilization," in S. E. Harris, ed., *Postwar Economic Problems* (New York, McGraw-Hill, 1943), pp. 375 *et seq.*, and the communications of C. P. Kindleberger and A. I. Bloomfield, *American Economic Review*, Vol. 39, March 1949 (pp. 491 *et. seq.*) and September 1949 (pp. 970 *et seq.*)

The difficulty is that any *consistent* response of Investment is not to be expected. If there were not a reasonable consistency of behavior as between Consumption and Income, there would be little use in employing the concept of a propensity to consume. It was this problem that prompted Machlup[1] to observe, "I chose to rule out all induced home investment because I considered a constant marginal propensity to invest far less possible than constant marginal propensities to consume and to import." Unfortunately, the solution of a zero marginal propensity to invest in no wise meets the problem—and in fact tends to conceal it —for what is more constant than zero?

No one questions the fact that entrepreneurial decisions on the subject of enlarging or contracting their capital stock are likely to be influenced by the level of present National Income, or by changes in that level. The more favored expression of this influence is the Acceleration Principle, or $I = f(dY/dt)$; for a rise in consumer or business demand, assuming existing capital to be fully occupied, points to the need for a rise in the capital stock. But even setting aside the possibility of existing and unemployed capital, entrepreneurs are interested, in their decisions to invest, in the *future* level of income, in the level of demand when the new capital goods are finished and ready for use. The assumption implicit in the Acceleration Principle is that entrepreneurial expectations are unit-elastic or elastic.[2] The fact that these expectations may vary presumably does much to explain why it has been so difficult to obtain empirical verification of this theory.

Moreover, *for short-run analysis*, the simpler assumption, $I = f(Y)$ is probably just as satisfactory. If Y has just risen, then in the immediate past dY/dt must have been positive, and perhaps still is. And the use of $I = f(Y)$ has the pragmatic appeal that it can be utilised in static models such as those employed herein.[3]

One may therefore conclude: It is just as likely—if not more so—that Investment will respond to changing National Income

[1] *Op. cit.*, p. 22.

[2] This may be contrasted with the assumption implicit in Liquidity Preference theory, which is that expectations regarding the interest rate are unit-elastic or inelastic.

[3] The equilibrium indicated by static models takes time to be reached, and the use of $I = f(Y)$ as an approximation to $I = f(dY/dt)$ is valid only for the short run. But as long as equilibrium has not been reached, dY/dt is still positive, even though its value may be falling. Both expressions are necessarily clumsy, crude methods of formalising behavior that is actually influenced by many variables.

as it is that it will not. But since decisions to invest are subjective decisions, decisions which seem unique to the entrepreneurs who make them, not conditioned by any behavior-pattern such as lies behind the consumption function, but rather determined by expectations regarding the future, the degree to which Investment will change is likely to be unpredictable. At least it will be unpredictable unless reference is had to more data than economic models commonly embrace. If one country experiences a rise in autonomous expenditure, and it trades with a second country wherein this Investment response is large, then the trade balance may in consequence turn against the second. This is regrettable. Presumably the function of theory is, if not to predict the future, at least to reduce the number of predictable outcomes; and to admit the "Kindleberger effect" is to admit that this number has not been reduced.

If the influence of Investment is to be recognised in a static model, it must be via the function $I = f(Y)$. The choice of *any* specific value for this function conflicts with the fact that the actual rise in Investment may be unpredictable; but the choice of a value such as to make a country's "propensity to spend" in excess of 1 is not necessarily an unreal choice.[1]

To illustrate this case in terms of the preceding diagrams, it is convenient to reduce the number of elements, rather than to increase them. This may be done by removing the I_1 and I_2 terms from equations (1) and (2) and by redefining the expressions $(a + hY)$. For each country, these expressions now signify the *sum* of the propensity to consume home-goods and the Investment propensity; each h represents the sum of the corresponding marginal propensities. Similarly, the expressions $(b + mY)$ now represent total exports (or imports), whether of consumption-goods or investment-goods. For the "Kindleberger effect" upon Country 2, the condition is still that $(h_2 + m_2)$ exceed 1. It may be noted in passing that presence or absence of the "Kindleberger effect" is not to be deduced from examining the $Y_2(Y_1)$ and $Y_1(Y_2)$ functions as they appear graphically, or

[1] To speak of a "propensity to spend in excess of 1" can, of course, be misleading. It does not imply that the typical consumer has a negative *MP* to save; it implies only that as income rises, business firms go into debt faster than consumers save. The same is true of the expression "unstable in isolation." Whether or not it is unstable depends on what happens to its import function; if isolated, it cannot import. It will be unstable if it seeks to buy domestic substitutes for imports of equal value, for the marginal propensity to consume home-goods will then exceed 1. Otherwise, its domestic multiplier is still positive and finite.

from evaluating their respective slopes. The slope of each is a mixture of one country's *MP* to import and the other's *MP* to buy home-goods. The same pair of curves may portray a case in which the effect is present, and one in which it is absent.

The effect will, of course, appear if one plots exports and imports, after the fashion of Fig. 7. Fig. 8 illustrates the "abnormal" case. It also indicates a perpetually unfavorable balance of trade for Country 2. This may seem to be heaping abnormality upon abnormality. One might expect the typical

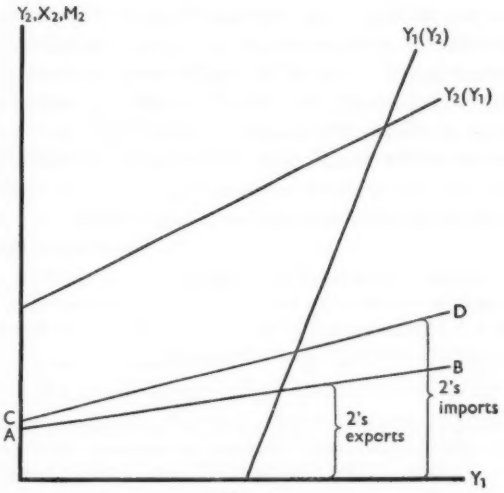

FIG. 8

export–import relationship, assuming one country's *MP*-to-spend in excess of 1, to be a simple reversal of Fig. 7—*i.e.*, the export and import functions in that figure change places, so that at low levels of Y_1, Country 2 would experience an export surplus, converted into an import surplus following a sufficient rise in Y_1. This expectation is not to be confirmed; it is virtually impossible. Given the Kindleberger assumption and the linear propensities herein assumed, once an import surplus, always an import surplus. The proof of this is in the footnote below.[1]

[1] The condition for an export surplus for Country 2 would be $X_2 > M_2$. This means (see equation (12)) :

$$b_1 + m_1 Y_1 > b_2 + m_2 \frac{a_2 + b_1}{1 - h_2} + m_2 \frac{m_1}{1 - h_2} Y_1.$$

If the unfortunate Country 2 is ever to experience an export surplus, it will be

This last point suggests that one cannot look for a fall in Y_1 to convert an import surplus for Country 2 into an export surplus. It is not argued that this offers any significant contribution to Professor Kindleberger's broader thesis of a *chronic* dollar shortage; for such models as these take no account of exchange-rate changes, of price effects or of the effect upon marginal propensities caused by the approach to full employment. In fact, the asymmetry in the Acceleration Principle suggests a danger in utilising such models for downward as well as upward movements of income. It is not usually possible to disinvest as fast as one can invest. Fig. 8 points to some *improvement* in the trade balance as Y_1 falls, even though it does not become positive. If Investment fails to drop off as rapidly as the assumed value of the marginal propensity to invest would indicate, then the improvement to which this diagram points might be exaggerated. Such a consideration would have to be reckoned with in seeking verification of the chronic-shortage argument, in addition to an examination of price and exchange-rate effects.

ROMNEY ROBINSON.

Massachusetts Institute of Technology.

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at low levels of Y_1—in particular, where $Y_1 = 0$. In this case two of the terms above vanish, and the export surplus condition becomes:

$$b_1 > b_2 + \frac{m_2}{1 - h_2} a_2 + \frac{m_2}{1 - h_2} b_1.$$

But the coefficient $m_2/(1 - h_2)$ preceding b_1 on the right-hand side is, in the Kingleberger case, greater than 1. Hence the condition cannot be fulfilled unless b_2 or a_2 is negative. The possibility of a_2 being negative seems sufficiently unreal to be dismissed. If b_2 is negative and sufficiently large, the condition may be satisfied, but only at the cost of departure from the linear case. A negative b_2 may conceivably be assumed—signifying that Country 2 does not begin to import from 1 until its income has passed some critical level. If income is below that level, imports are not negative, but simply zero; the true import function is kinked. If Country 2 imports nothing, then it certainly may hope for an export surplus; but since in this region the marginal propensity to import is actually zero, the total MP to spend is not likely to exceed 1, and the case is not the Kindleberger case after all.

SYSTEMS OF AGGREGATIVE INDEX NUMBERS AND THEIR COMPATIBILITY

1. Introduction

Once national accounting and input–output studies reach a certain stage and the information presented in them becomes available for a number of years, it is inevitable that attempts will be made to adjust the series expressed in current money terms for changes in prices. This involves the construction of index numbers of quantities and prices. But the construction of these different index numbers can no longer be regarded as isolated and independent investigations, since the series from which they are constructed are related to one another, and these relationships should be retained as far as possible in the index numbers. In this situation the index numbers themselves form a system, and their interdependence should be recognised both in planning the collection of price and quantity information and in choosing the methods to be followed in constructing the index numbers. It is the object of this paper to investigate these problems of consistency in the case of aggregative index numbers. For this purpose it is convenient to establish a notation in which the matrices of basic information on prices, costs and quantities can be expressed and related.[1] This is done in Section 2.

In Section 3 the compatibility of different quantity index numbers is examined. It is shown that an index number of total product obtained by aggregating quantity index numbers of the net outputs of different industries is in principle identical to the index number obtained by aggregating quantity index numbers for groups of final expenditures. It is also shown that quantity index numbers constructed on different bases of valuation, such as market prices and factor costs, are in general not compatible and cannot be transformed into one another.

In Section 4 the compatibility of price and quantity index numbers is briefly treated. As is well known, the product of

[1] This paper represents an extension of the brief treatment of the compatibility of index numbers given in a paper entitled "Inter-Country Comparisons of the National Accounts" which was read by Richard Stone and Kurt Hansen at a conference of the International Association for Research in Income and Wealth held in August 1951. In its preparation we have benefited from helpful discussions with Arthur Adams.

a Laspeyres (Paasche) quantity index and a Paasche (Laspeyres) price index will yield identically the change in value of the group of transactions concerned.

In Section 5 an additive expression for the change in the productivity of an industry is given. The practical utility of this expression is negligible until some means is found of measuring the quantity of different factors of production in use.

In Sections 6 and 7 a brief discussion is given of the various practical complications that may be met in applying the system, though these do not disturb the basic rules given for constructing the index numbers.

Up to this point consideration is given to expressing aggregates of goods and services, *and of goods and services only*, in terms of constant prices. Such deflation is in principle simple because the components of these aggregates are goods and services which in principle can be measured and priced. The position is quite different in the case of other transactions, such as taxes, transfers, saving, lending, etc., that is unilateral transactions and those in financial claims. Transactions in factor services are also for practical reasons in this category unless some means can be found of measuring and pricing them.

These other types of transaction enter into the national accounts along with transactions in goods and non-factor services. The question arises therefore as to whether the national accounts as a whole can be expressed in the prices of another period in such a way that they continue to balance. It is shown that, while in simpler cases conventions can be found which provide a unique solution to this problem, the solution is arbitrary and likely to be misleading in economic analysis. It is also shown that in the general case the solution is not unique but has a multiply infinite number of values. These problems are set out in Section 8.

The conclusions of the paper are summarised in Section 9. In the authors' view the consistent deflation of aggregates composed of goods and non-factor services is an important task which should influence work on economic statistics from the stage of collecting the basic information on prices and quantities to the final compilation of the results. The deflation of other aggregates in the national accounts is, however, quite a different matter, and the arbitrary character of simple solutions, such as those indicated in Section 8, should be recognised. The provision of a complete set of national accounts which balance uniquely when expressed in terms of the prices of a different base period is shown

to be arbitrary and, in general, impossible, at least in terms of the methods examined in Section 8.

2. Matrices of Prices, Quantities and Values and the Relationships between Them

For an economy represented by N sectors transacting on n accounts [1] the value of goods and services as a whole passing between sectors at market prices and at factor costs may be represented by $Nn \times Nn$ matrices denoted respectively by $\mathbf{W}$ and $\boldsymbol{\omega}$. An element of either of these matrices represents the value of the sales of goods and services by account i of sector r to account j of sector s; $r, s = 1, \ldots, N$; $i, j = 1, \ldots, n$. These values are composed of the sum of the sales of each of the m goods and services (including factor services) of the system which are sold by r to s, and the difference between the two matrices is that the elements of $\mathbf{W}$ are valued at market prices and those of $\boldsymbol{\omega}$ are valued at factor costs. It is assumed that all transactions between the same accounts of a sector cancel out and so the leading diagonal elements of $\mathbf{W}$ and $\boldsymbol{\omega}$ are zeros.

These matrices are related to matrices of quantities and prices in the following way. Let the sales of the kth commodity from account i of sector r to account j of sector s be written as ${}_{ij}w_{rs}{}^{k}$. All sales by sector r to sector s may then be arranged in a matrix of order $mn \times n$. Thus

$$W_{rs} = \begin{bmatrix} {}_{11}w_{rs}{}^{1} & {}_{12}w_{rs}{}^{1} & \cdots & {}_{1n}w_{rs}{}^{1} \\ \vdots & \vdots & & \vdots \\ {}_{11}w_{rs}{}^{m} & {}_{12}w_{rs}{}^{m} & \cdots & {}_{1n}w_{rs}{}^{m} \\ {}_{21}w_{rs}{}^{1} & {}_{22}w_{rs}{}^{1} & \cdots & {}_{2n}w_{rs}{}^{1} \\ \vdots & \vdots & & \vdots \\ {}_{21}w_{rs}{}^{m} & {}_{22}w_{rs}{}^{m} & \cdots & {}_{2n}w_{rs}{}^{m} \\ \vdots & \vdots & & \vdots \\ {}_{n1}w_{rs}{}^{1} & {}_{n2}w_{rs}{}^{1} & \cdots & {}_{nn}w_{rs}{}^{1} \\ \vdots & \vdots & & \vdots \\ {}_{n1}w_{rs}{}^{m} & {}_{n2}w_{rs}{}^{m} & \cdots & {}_{nn}w_{rs}{}^{m} \end{bmatrix}_{mn}^{n} \quad . \quad . \quad (1)$$

All the transactions of the economy may be arranged in a

[1] In practice there will be very few accounts, say, an operating account, an appropriation account, a capital transactions account and possibly an external account for exports and imports; in the algebra of partitioned matrices, however, it is just as convenient to treat the general case of n accounts.

matrix of order $Nmn \times Nn$, which may be partitioned into $N \times N$ submatrices such as W_{rs}. Thus

$$\mathbf{W} = \begin{matrix} Nmn \\ \end{matrix}\begin{bmatrix} W_{11} & W_{12} & \cdots & W_{1N} \\ \vdots & \vdots & & \vdots \\ W_{N1} & W_{N2} & \cdots & W_{NN} \end{bmatrix}^{Nn} = [W_{rs}] \quad . \quad (2)$$

The elements of $\mathbf{W}$ are transactions at market prices. Analogously, we define a matrix

$$\mathbf{Q} = [Q_{rs}]. \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (3)$$

which has as elements the physical quantities transacted.

Market prices may be represented by an $mn \times mn$ diagonal matrix which has the prices of the m commodities repeated n times down the diagonal. Thus

$$P = \begin{matrix} mn \\ \end{matrix}\begin{bmatrix} p_1 & & & & & & & & & & & & mn \\ & p_2 & & & & & & & & & & & \\ & & \ddots & & & & & & & & & & \\ & & & p_m & & & & & & & & & \\ & & & & p_1 & & & & & & & & \\ & & & & & \ddots & & & & & & & \\ & & & & & & p_m & & & & & & \\ & & & & & & & \ddots & & & & & \\ & & & & & & & & p_1 & & & & \\ & & & & & & & & & \ddots & & & \\ & & & & & & & & & & p_m & & \end{bmatrix} \quad (4)$$

The matrix W_{rs} is then given by

$$W_{rs} = PQ_{rs} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (5)$$

and if

$$\mathbf{P} = \begin{matrix} Nmn \\ \end{matrix}\begin{bmatrix} P & & & \\ & P & & \\ & & \ddots & \\ & & & P \end{bmatrix}^{Nmn} \quad . \quad . \quad . \quad . \quad . \quad (6)$$

where the submatrix P is repeated N times down the diagonal, there results, since the matrices are conformably partitioned,

$$\begin{bmatrix} W_{11} & \cdots & W_{1N} \\ \vdots & & \vdots \\ W_{N1} & \cdots & W_{NN} \end{bmatrix} = \begin{bmatrix} P & & \\ & \ddots & \\ & & P \end{bmatrix} \begin{bmatrix} Q_{11} & \cdots & Q_{1N} \\ \vdots & & \vdots \\ Q_{N1} & \cdots & Q_{NN} \end{bmatrix} \quad (7)$$

Each matrix in (7) has for its elements $N \times N$ submatrices which satisfy (5). Thus, by using partitioned matrices it is possible to write the equations without specifying the number of accounts on which transactions take place. Thus equation (7) may be written

$$\mathbf{W} = \mathbf{PQ} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (8)$$

In succeeding developments use will be made of several matrix operators which may conveniently be defined here. Let the unit vector of order x be denoted by $\mathbf{i}_x$. The matrix of order $xy \times y$ which has this vector in its leading " diagonal " elements and zeros elsewhere is denoted by $\mathbf{I}_{xy.y}$. Two further vectors are required namely $\mathbf{h}_x = \{1, 0, \ldots, 0\}_x$ and $\mathbf{j}_x = \{0, 1, \ldots, 1\}_x$ which are related to $\mathbf{i}_x$ by the equation

$$\mathbf{i}_x = \mathbf{h}_x + \mathbf{j}_x \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (9)$$

The matrices of order $xy \times y$ which have respectively $\mathbf{h}_x$ and $\mathbf{j}_x$ in their leading diagonal elements and zeros elsewhere are denoted by $\mathbf{H}_{xy.y}$ and $\mathbf{J}_{xy.y}$.

The matrix w_{rs} is an $n \times n$ matrix of transactions between sector r and sector s on n accounts (but not specifying the distribution of the transactions as between commodities) and is related to W_{rs} by the equation

$$w_{rs} = \mathbf{I}'_{mn.n} W_{rs} \quad . \quad . \quad . \quad . \quad . \quad . \quad (10)$$

In a similar way the matrix $\mathbf{w}$ is an $Nn \times Nn$ matrix of transactions between the accounts of the different sectors and is related to $\mathbf{W}$ by the equation

$$\begin{aligned} \mathbf{w} &= \mathbf{I}'_{Nmn.Nn}\mathbf{W} \\ &= \mathbf{I}'_{Nmn.Nn}\mathbf{PQ} \\ &= \mathbf{p}'\mathbf{Q} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (11) \end{aligned}$$

where $\mathbf{p}'$ is an $Nn \times Nmn$ matrix similar to $\mathbf{I}'_{Nmn.Nn}$ and has the m prices repeated in each row where $\mathbf{I}'_{Nmn.Nn}$ has 1's.

The greek letters $\mathbf{\Omega}, \mathbf{\Pi}$ and $\boldsymbol{\pi}'$ may be used to denote the factor cost equivalents of $\mathbf{W}$, $\mathbf{P}$ and $\mathbf{p}'$. Then corresponding to (8) and (11) there are the equations

$$\mathbf{\Omega} = \mathbf{\Pi Q} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (12)$$

and

$$\boldsymbol{\omega} = \mathbf{I}'_{Nmn.Nn}\mathbf{\Omega} = \boldsymbol{\pi}'\mathbf{Q} \quad . \quad . \quad . \quad . \quad (13)$$

Let the $Nmn \times Nmn$ matrix $\mathbf{T}$ represent the net indirect taxes per unit imposed at all stages of their production on the

m commodities. The matrix $\mathbf{T}$ has exactly the same form as $\mathbf{P}$ and $\mathbf{\Pi}$ and is related to them by the equation

$$\mathbf{P} = \mathbf{\Pi} + \mathbf{T} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (14)$$

If (14) is pre-multiplied by $\mathbf{I}'_{Nmn \cdot Nn}$ and post-multiplied by $\mathbf{Q}$ there results

$$\mathbf{w} = \boldsymbol{\omega} + \mathbf{t}'\mathbf{Q} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (15)$$

where $\mathbf{t}' \equiv \mathbf{I}'_{Nmn \cdot Nn}\mathbf{T}$

Let $\mathbf{R}$ denote an $Nmn \times Nmn$ matrix similar in form to $\mathbf{T}$ but containing repeated in the leading diagonal not the net indirect taxes per unit of the different commodities but the rate of net indirect taxation in relation to the factor cost value. Thus

$$\mathbf{P} = \mathbf{R\Pi} = \mathbf{\Pi R} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (16)$$

whence

$$\mathbf{R} = \mathbf{P\Pi}^{-1} = \mathbf{\Pi}^{-1}\mathbf{P} \quad . \quad . \quad . \quad . \quad . \quad . \quad (17)$$

and from (14)

$$\mathbf{T} = \mathbf{\Pi}(\mathbf{R} - \mathbf{I}) = (\mathbf{R} - \mathbf{I})\mathbf{\Pi} \quad . \quad . \quad (18)$$

where $\mathbf{I}$ is the $Nmn \times Nmn$ unit matrix.

If a substitution is made for $\mathbf{P}$ in (8) from (16) and if the resulting equation is pre-multiplied by $\mathbf{I}'_{Nmn \cdot Nn}$ there results on using (12)

$$\mathbf{w} = \mathbf{I}'_{Nmn \cdot Nn}\mathbf{R\Pi Q} = \mathbf{I}'_{Nmn \cdot Nn}\mathbf{R\Omega} \quad . \quad . \quad . \quad (19)$$

and in a similar way these equations may be combined to yield

$$\boldsymbol{\omega} = \mathbf{I}'_{Nmn \cdot Nn}\mathbf{R}^{-1}\mathbf{W} \quad . \quad . \quad . \quad . \quad . \quad (20)$$

Equations (19) and (20) permit $\mathbf{w}$ and $\boldsymbol{\omega}$ which contain information about transactions in goods and services between sectors to be expressed in terms of $\mathbf{\Omega}$ and $\mathbf{W}$. These large matrices contain information about the composition of the transactions in goods and services. It is not possible to establish a relationship between $\mathbf{w}$ and $\boldsymbol{\omega}$ without simplifying assumptions.

The simplest assumption which would permit $\mathbf{w}$ to be expressed in terms of $\boldsymbol{\omega}$ relates to the elements of $\mathbf{R}$. If the rate of net indirect taxation is the same in respect of each part of net output, then $\mathbf{R}$ would take the special form

$$\mathbf{R} = \rho\mathbf{I} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (21)$$

where ρ is a scalar. It would then follow from (19) that

$$\mathbf{w} = \rho\boldsymbol{\omega} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (22)$$

The second possibility is that sufficient restrictions exist on the elements of $\mathbf{W}$ to enable these elements to be determined

from a knowledge of $\mathbf{w}$. If there exists a $Nmn \times Nn$ matrix $\boldsymbol{\mu}$, the elements of which are known, such that

$$\mathbf{W} = \boldsymbol{\mu}\mathbf{w} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (23)$$

then by substituting for $\mathbf{W}$ in (20) from (23) it follows that

$$\boldsymbol{\omega} = \mathbf{I}'_{Nmn \cdot Nn}\mathbf{R}^{-1}\boldsymbol{\mu}\mathbf{w} \quad . \quad . \quad . \quad . \quad . \quad . \quad (24)$$

The kind of restriction required on the elements of $\mathbf{W}$ (or $\boldsymbol{\Omega}$) is one which states that the other sectors take up the different goods and services sold by any one sector in a common proportion. This condition will be met if the scalar elements in each of the $m \times 1$ vector elements in the "diagonal" of $\boldsymbol{\mu}$ sum to unity and if the remaining elements of $\boldsymbol{\mu}$ are zeros. A special case of this is the one in which $m = N$, $n = 1$, and a different scalar element in each of the $m \times 1$ vector elements in the "diagonal" of $\boldsymbol{\mu}$ is equal to unity. In such a situation there is a one-one correspondence between m and N and each account sells one and only one commodity. In this situation it is also true that

$$\boldsymbol{\mu}'\boldsymbol{\mu} = \mathbf{I} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (25)$$

whence, on pre-multiplying (23) by $\boldsymbol{\mu}'$,

$$\mathbf{w} = \boldsymbol{\mu}'\mathbf{W} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (26)$$

and similarly, in view of the special constitution of $\boldsymbol{\mu}$ in this case,

$$\omega = \boldsymbol{\mu}'\boldsymbol{\Omega} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (27)$$

A substitution for $\mathbf{P}$ from (16) into (8) yields

$$\begin{aligned} \mathbf{W} &= \mathbf{R}\boldsymbol{\Pi}\mathbf{Q} \\ &= \mathbf{R}\boldsymbol{\Omega} \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (28) \end{aligned}$$

from which it follows by substitution for $\mathbf{W}$ from (28) and for $\boldsymbol{\Omega}$ from the similar equation connecting $\boldsymbol{\Omega}$ and $\boldsymbol{\omega}$ that

$$\mathbf{w} = \boldsymbol{\mu}'\mathbf{R}\boldsymbol{\mu}\boldsymbol{\omega} \quad . \quad . \quad . \quad . \quad . \quad . \quad (29)$$

where $\boldsymbol{\mu}'\mathbf{R}\boldsymbol{\mu}$ is an $m \times m = N \times N$ diagonal matrix with the m rates of taxation in the leading diagonal.

It will be seen in the next section that $\mathbf{w}$ and $\boldsymbol{\omega}$ play a central role in the construction of index numbers. Despite the many relationships among the matrices of quantities, prices, costs, taxes and sales, it is not possible to transform $\mathbf{w}$ into $\boldsymbol{\omega}$ except in special circumstances.

3. The Compatibility of Quantity Index Numbers

The matrices $\mathbf{w}$ and $\boldsymbol{\omega}$ are of order $Nn \times Nn$ and relate to the n accounts of the N sectors of the economy. Without loss of

generality it may be supposed in what follows that the first account of each sector is the operating account.

The post-multiplication of (13) by the summation vector $\mathbf{i}_{Nn}$ yields

$$\boldsymbol{\omega}\mathbf{i}_{Nn} = \boldsymbol{\pi}'\mathbf{Q}\mathbf{i}_{Nn} \quad . \quad . \quad . \quad . \quad . \quad . \quad (30)$$

that is an $Nn \times 1$ vector of the total sales proceeds valued at factor cost of each account of each sector. The pre-multiplication of (30) by $\mathbf{H}'_{Nn.N}$ yields the $N \times 1$ vector

$$\mathbf{H}'_{Nn.N}\boldsymbol{\omega}\mathbf{i}_{Nn} = \mathbf{H}'_{Nn.N}\boldsymbol{\pi}'\mathbf{Q}\mathbf{i}_{Nn} \quad . \quad . \quad . \quad (31)$$

which has for its elements the sales proceeds of only the N operating accounts. The effect of pre-multiplication by $\mathbf{H}'_{Nn.N}$ is thus to condense the matrix, selecting those elements of the matrix which are of interest in the construction of output index numbers.

If next the $Nn \times 1$ vector $\mathbf{H}_{Nn.N}\mathbf{i}_N$ is denoted by $\boldsymbol{\eta}_{Nn}$, then the post-multiplication of the transpose of $\boldsymbol{\omega}$ by $\boldsymbol{\eta}_{Nn}$ and its pre-multiplication by $\mathbf{H}'_{Nn.N}$ yields

$$\mathbf{H}'_{Nn.N}\boldsymbol{\omega}'\boldsymbol{\eta}_{Nn} = \mathbf{H}'_{Nn.N}\mathbf{Q}'\boldsymbol{\pi}\boldsymbol{\eta}_{Nn} \quad . \quad . \quad . \quad (32)$$

which is an $N \times 1$ vector of the purchases valued at factor cost by the operating account of each sector from the operating accounts of all other sectors. Factor services are excluded from the summation, since these only appear in the final $(n-1)$ columns of each sector. Each side of (32) is therefore a vector of all inputs into the N operating accounts excluding factor services.

The expressions (31) and (32) are the basis of the following discussion of index numbers. It may next be noted that the matrices $\boldsymbol{\pi}$ and $\mathbf{Q}$ may be established for different time periods, t, and may be denoted by $\boldsymbol{\pi}_t$ and $\mathbf{Q}_t$ respectively. In accordance with the usual symbolism of index numbers t will here take the values 0 and 1. Thus

$$\boldsymbol{\omega}_{01} = \boldsymbol{\pi}_0'\mathbf{Q}_1 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (33)$$

denotes the goods and services transaction matrix of quantities transacted in period 1 at the factor costs ruling at periods 0. If the quotient of two vectors $\boldsymbol{x} = \{x_1, \ldots, x_N\}$ and $\boldsymbol{y} = \{y_1, \ldots, y_N\}$ is defined to be the vector $\{x_1/y_1, \ldots, x_N/y_N\}$ and is denoted by $\mathbf{x}/\mathbf{y}$, then

$$\mathbf{H}'\boldsymbol{\omega}_{01}\mathbf{i}/\mathbf{H}'\boldsymbol{\omega}_{00}\mathbf{i} = \mathbf{H}'\boldsymbol{\pi}_0'\mathbf{Q}_1\mathbf{i}/\mathbf{H}'\boldsymbol{\pi}_0'\mathbf{Q}_0\mathbf{i}, \quad . \quad . \quad (34)$$

where the suffixes on the matrix operators are now omitted, represents the vector of base weighted gross output index numbers of the N sectors, while

$$\mathbf{H}'\boldsymbol{\omega}_{01}'\boldsymbol{\eta}/\mathbf{H}'\boldsymbol{\omega}_{00}'\boldsymbol{\eta} = \mathbf{H}'\mathbf{Q}_1'\boldsymbol{\pi}_0\boldsymbol{\eta}/\mathbf{H}'\mathbf{Q}_0'\boldsymbol{\pi}_0\boldsymbol{\eta}. \quad . \quad (35)$$

represents the vector of base weighted input index numbers (excluding factor services) of the N sectors. Accordingly

$$\frac{\mathbf{H}'\boldsymbol{\omega}_{01}\mathbf{i} - \mathbf{H}'\boldsymbol{\omega}_{01}'\boldsymbol{\eta}}{\mathbf{H}'\boldsymbol{\omega}_{00}\mathbf{i} - \mathbf{H}'\boldsymbol{\omega}_{00}'\boldsymbol{\eta}} = \frac{\mathbf{H}'\boldsymbol{\pi}_0'\mathbf{Q}_1\mathbf{i} - \mathbf{H}'\mathbf{Q}_1'\boldsymbol{\pi}_0\boldsymbol{\eta}}{\mathbf{H}'\boldsymbol{\pi}_0'\mathbf{Q}_0\mathbf{i} - \mathbf{H}'\mathbf{Q}_0'\boldsymbol{\pi}_0'\boldsymbol{\eta}} \quad . \quad (36)$$

represents the vector of base weighted net output (value added) index numbers of the N sectors.

If the elements of the vector which forms the numerator (or denominator) of the left-hand side of (36) are summed, then all the intermediate products will cancel out. Thus if $\boldsymbol{\theta} = \mathbf{J}\mathbf{i} = \mathbf{i} - \boldsymbol{\eta}$, then

$$\begin{aligned}\mathbf{i}'(\mathbf{H}'\boldsymbol{\omega}_{01}\mathbf{i} - \mathbf{H}'\boldsymbol{\omega}_{01}'\boldsymbol{\eta}) &= \boldsymbol{\eta}'\boldsymbol{\omega}_{01}\mathbf{i} - \boldsymbol{\eta}'\boldsymbol{\omega}_{01}\boldsymbol{\eta} \\ &= \boldsymbol{\eta}'\boldsymbol{\omega}_{01}\boldsymbol{\theta} \quad . \quad . \quad . \quad . \quad . \quad (37)\end{aligned}$$

since $\boldsymbol{\eta}'\boldsymbol{\omega}_{01}'\boldsymbol{\eta}$ is a scalar and may be transposed without altering its value. In other words the value at factor cost of the aggregate of net outputs of the N operating accounts is identical to the value, also at factor cost, of the aggregate of gross outputs of goods sold to final consumers, that is to all non-operating accounts. This is true whatever the period may be to which the factor costs relate and so

$$\frac{\mathbf{i}'(\mathbf{H}'\boldsymbol{\omega}_{01}\mathbf{i} - \mathbf{H}'\boldsymbol{\omega}_{01}'\boldsymbol{\eta})}{\mathbf{i}'(\mathbf{H}'\boldsymbol{\omega}_{00}\mathbf{i} - \mathbf{H}'\boldsymbol{\omega}_{00}'\boldsymbol{\eta})} = \frac{\boldsymbol{\eta}'\boldsymbol{\omega}_{01}\boldsymbol{\theta}}{\boldsymbol{\eta}'\boldsymbol{\omega}_{00}\boldsymbol{\theta}} \quad . \quad . \quad . \quad (38)$$

Thus the same result is obtained by making a net output index for all operating accounts (industries) as for making a gross input index for all other accounts (final output) provided that the basis of valuation is the same in the two cases.

The index numbers given so far are all at factor cost. This is in accord with the usual practice in the case of index numbers of net output but not in the case of index numbers of final expenditures, which are usually constructed with market-price values as weights. Equation (38) is immediately converted into a system of market-price index numbers by replacing $\boldsymbol{\omega}$ by $\mathbf{w}$. But if it is desired to replace $\boldsymbol{\omega}$ by $\mathbf{w}$ only on the right-hand side of (38) and to find a multiplier which will transform $\boldsymbol{\eta}'\boldsymbol{\omega}_{01}\boldsymbol{\theta}/\boldsymbol{\eta}'\boldsymbol{\omega}_{00}\boldsymbol{\theta}$ into $\boldsymbol{\eta}'\mathbf{w}_{01}\boldsymbol{\theta}/\boldsymbol{\eta}'\mathbf{w}_{00}\boldsymbol{\theta}$ it will be found that this cannot be done unless (21) holds. In this case the scalar ρ_0^{-1} will cancel out between the numerator and denominator of the right-hand side of (38). Even in the next simplest case, in which (29) holds, it can be seen that

$$\boldsymbol{\eta}'\boldsymbol{\omega}_{01}\boldsymbol{\theta} = \boldsymbol{\eta}'(\boldsymbol{\mu}_0'\mathbf{R}_0\boldsymbol{\mu}_0)^{-1}\mathbf{w}_{01}\boldsymbol{\theta} \quad . \quad . \quad . \quad (39)$$

and there is no means of factorising the right-hand side of this equation into a matrix times $\boldsymbol{\eta}'\mathbf{w}_{01}\boldsymbol{\theta}$, unless $\mathbf{R}_0$ satisfies (21) in which case

$$\boldsymbol{\eta}'\boldsymbol{\omega}_{01}\boldsymbol{\theta} = \rho_0^{-1}\boldsymbol{\eta}'\mathbf{w}_{01}\boldsymbol{\theta} \quad . \quad . \quad . \quad . \quad . \quad (40)$$

as before.

From this it follows that in practice the compatibility of an index of net output and an index of final expenditures can be ascertained only if each is constructed with either factor-cost or market-price weights. If, for example, the net output index is constructed with factor-cost weights while the final expenditure index is constructed with market-price weights, then in principle they will differ partly on account of imperfections of data and inconsistencies of treatment and partly on account of differences of weights. The discrepancy due to the latter influence cannot be ascertained from a knowledge of prices, quantities and tax rates, and so the former influence cannot be isolated. The only way in which this can be done is by using the same weights in the construction of both index numbers.

4. The Compatibility of Price and Quantity Index Numbers

In order to obtain compatibility it is necessary to define the price index number corresponding to a given quantity index number in such a way that their product is equal to the change in the value of the corresponding transactions. These corresponding price index numbers are obtained by changing the suffixes in the transaction matrices. Thus the price index numbers corresponding to the quantity index numbers in (38) are

$$\frac{\mathbf{i}'(\mathbf{H}'\boldsymbol{\omega}_{11}\mathbf{i} - \mathbf{H}'\boldsymbol{\omega}_{11}'\boldsymbol{\eta})}{\mathbf{i}'(\mathbf{H}'\boldsymbol{\omega}_{01}\mathbf{i} - \mathbf{H}'\boldsymbol{\omega}_{01}'\boldsymbol{\eta})} = \frac{\boldsymbol{\eta}'\boldsymbol{\omega}_{11}\boldsymbol{\theta}}{\boldsymbol{\eta}'\boldsymbol{\omega}_{01}\boldsymbol{\theta}} \quad . \quad . \quad . \quad (41)$$

The two sides of this equation represent respectively a Paasche index number of unit factor costs in all industries and a Paasche index number of the price of final expenditures at factor cost values. Similar index numbers at market-price values are obtained by substituting $\mathbf{w}$ for $\boldsymbol{\omega}$ with appropriate suffixes throughout (41). It will at once be seen that if each side of (38) is multiplied by the corresponding side of (41) there results the well-known identity

$$\frac{\mathbf{i}'(\mathbf{H}'\boldsymbol{\omega}_{11}\mathbf{i} - \mathbf{H}'\boldsymbol{\omega}_{11}'\boldsymbol{\eta})}{\mathbf{i}'(\mathbf{H}'\boldsymbol{\omega}_{00}\mathbf{i} - \mathbf{H}'\boldsymbol{\omega}_{00}'\boldsymbol{\eta})} = \frac{\boldsymbol{\eta}'\boldsymbol{\omega}_{11}\boldsymbol{\theta}}{\boldsymbol{\eta}'\boldsymbol{\omega}_{00}\boldsymbol{\theta}} \quad . \quad . \quad . \quad (42)$$

which expresses the equality of the domestic product and the final expenditures on this product each expressed in terms of the same set of unit values, in this case factor costs.

Thus the sum of a set of net-output index numbers each multiplied by the corresponding index number of net-output unit values is equal to the change in the value of final expenditures. Thus given $\boldsymbol{\pi}_0$ (or $\mathbf{p}_0$), $\boldsymbol{\pi}_1$ (or $\mathbf{p}_1$), $\mathbf{Q}_0$ and $\mathbf{Q}_1$ a completely consistent system of price and quantity index numbers relating to the net output and the total sales of each operating account and to the aggregate of all operating accounts can readily be constructed.

5. Net Inputs and Productivity

In Sections 3 and 4 the summation of inputs extended only over goods and services other than factor services, the quantities of the latter being confined to the last $f < m$ rows of each submatrix of $\mathbf{Q}$, where f is the number of distinct types of factor service in the system. If the quantity of these factor services could be measured, which in practice seems to be impossible, then it would be possible to construct for each industry and for the whole of the economy index numbers of the input of factors of production. The ratios of these index numbers to those of net output would give a measure of changes in productivity in each industry and in the economy as a whole, as can be seen as follows. The vector of the value of factor inputs into the N operating accounts is

$$\mathbf{H}'\boldsymbol{\omega}'\boldsymbol{\theta} = \mathbf{H}'\mathbf{Q}'\boldsymbol{\pi}\boldsymbol{\theta} \quad . \quad . \quad . \quad . \quad . \quad (43)$$

The quotient of the vector of the current input of factors and the vector of base-year input both measured in quantities at base-year factor costs is therefore

$$\mathbf{H}'\boldsymbol{\omega}_{01}'\boldsymbol{\theta}/\mathbf{H}'\boldsymbol{\omega}_{00}'\boldsymbol{\theta} = \mathbf{H}'\mathbf{Q}_1'\boldsymbol{\pi}_0\boldsymbol{\theta}/\mathbf{H}'\mathbf{Q}_0'\boldsymbol{\pi}_0\boldsymbol{\theta} \quad . \quad . \quad (44)$$

and the quotient of the sums of the elements of these vectors, namely

$$\mathbf{i}'\mathbf{H}'\boldsymbol{\omega}_{01}'\boldsymbol{\theta}/\mathbf{i}'\mathbf{H}'\boldsymbol{\omega}_{00}'\boldsymbol{\theta} = \boldsymbol{\eta}'\mathbf{Q}_1'\boldsymbol{\pi}_0\boldsymbol{\theta}/\boldsymbol{\eta}'\mathbf{Q}_0'\boldsymbol{\pi}_0\boldsymbol{\theta} \quad . \quad . \quad (45)$$

provides a measure of the change in the aggregate quantity of factor input in the economy. The division of (36) and (38) by respectively (44) and (45) gives measures of the change in the productivity of each industry and of industry as a whole. These measures of changes in productivity are obtained by relating the change in the quantity of net output to the change in the

quantity of input of factors. They seem appropriate and have the convenient additive property just demonstrated. It might be thought, however, that an alternative measure, also appropriate, would be given by the relation of the change in the quantity of gross output to the change in the quantity of factors and other inputs (goods and services purchased from other industries). For individual industries this measure would be given by

$$\frac{\mathbf{H}'\boldsymbol{\omega}_{01}\mathbf{i}}{\mathbf{H}'\boldsymbol{\omega}_{00}\mathbf{i}} \cdot \frac{\mathbf{H}'\boldsymbol{\omega}_{00}'\mathbf{i}}{\mathbf{H}'\boldsymbol{\omega}_{01}'\mathbf{i}} \quad . \quad . \quad . \quad . \quad . \quad (46)$$

This measure can be regarded as the ratio of the change in the quantities of products flowing out of an industry to the change in the quantities of factors and materials flowing in. For a whole (closed) economy the corresponding concept is the ratio of the change in the quantity of final products flowing out of productive activity and absorbed by final expenditures to the change in the quantity of factors of production flowing into production. All intermediate goods and services sold by one operating account (industry) to another take place within the field of productive activity, and should cancel out. Thus the measure of productivity for the economy as a whole should be

$$\frac{\boldsymbol{\eta}'\boldsymbol{\omega}_{01}\boldsymbol{\theta}}{\boldsymbol{\eta}'\boldsymbol{\omega}_{00}\boldsymbol{\theta}} \cdot \frac{\boldsymbol{\eta}'\boldsymbol{\omega}_{00}'\boldsymbol{\theta}}{\boldsymbol{\eta}'\boldsymbol{\omega}_{01}'\boldsymbol{\theta}} \quad . \quad . \quad . \quad . \quad . \quad (47)$$

which is the measure obtained by comparing net outputs and factor inputs and is the ratio of the right-hand side of expression (38) to expression (45).

This measure can be obtained from (46) only if, before summation over the sectors, the elements of (46) are weighted by two factors. The first of these is the proportional change in the ratio of the quantity of goods and services (including factor services) purchased by each industry to the quantity of factor services purchased by the same industry. The second is the proportional change in the ratio of the quantity of net output of each industry to the quantity of gross output for each industry. In all cases the valuations are at base-period factor costs. If in addition the sum of the elements in each row of $\boldsymbol{\omega}_{00}$ is equal to the sum of the elements in the corresponding column, then these weighted measures for individual industries will aggregate to (47). This procedure is algebraically trivial, but may be of interest in practice because of simplifying assumptions that can be made about these weighting factors.

6. Many Types of Final Buyer

The above discussion could have been conducted on the assumption that each sector of the economy had only an operating account and that all non-operating accounts, that is to say the appropriation and capital transactions accounts of all industries and of persons and public authorities, were aggregated into a final row and column relating to all final consumers. The use of the algebra of partitioned matrices has, however, made clear that there is no formal difficulty in introducing the usual complications such as government activity, asset formation, etc., necessary to make the representation more realistic. The real difficulty with these features of the economy is to find acceptable indicators of changes in the quantity of different activities.

The main effects of introducing non-operating accounts explicitly into the system are briefly as follows :

(1) *Personal appropriation account.* Factor services (except depreciation) supplied by any sector are credited to appropriation account and debited to operating account. The operating account of the personal sector thus need only include transactions such as domestic services supplied to households. It should be noted that sales of goods from persons to industry are shown as negative sales from the operating account of industry to the appropriate non-operating account of the personal sector.

(2) *Corporate appropriation accounts.* If this type of account is shown separately in the system, then all factors remunerated from the operating surpluses of corporations must be treated as supplied by these appropriation accounts. If this is not done some supplies of factors will not appear as operating debits at all but as transactions between appropriation accounts. This treatment also avoids any difficulty that might arise on the expenditure side of this account where corporate dividends will appear as a part of the division of the corporate earnings (which pass from the operating to the appropriation account of corporations) and therefore as a transfer.

(3) *Government appropriation accounts.* In national accounting government is usually treated as a final consumer. For present purposes it is convenient to treat the government appropriation account(s) as buying at cost the services of administration and the like from the government operating account(s). Such a treatment involves the usual assumption that all government services are "final." If it is desired to treat some of these services as intermediate and consequently to be debited to the operating

accounts of the industries which directly benefit them, then it will be necessary to enter subsidies from the government appropriation account to the operating account of these industries equal in value to the cost of the free services to which they correspond.

If there are separable government agencies or departments which render free services to only one industry, then a simplification of the system can be obtained if the operating accounts of the government agency and the industry which benefits are consolidated and treated as a new industry in place of the two former industries. The advantage of this procedure is that it makes it unnecessary to measure changes in the intermediate product supplied by the government agency. This advantage is gained by reducing the detail of the industrial classification, but in practice may be well worth while.

(4) *Capital transactions accounts.* As has been seen, the introduction of fixed-asset formation and stock changes [1] introduces no difficulties of principle. The goods and services purchased for adding to wealth appear among final expenditures. If, however, industries undertake work of a capital nature the cost of which is not charged to their operating account, then it is necessary to set up a separate operating account (which may be consolidated with an appropriate industry such as building, engineering, etc.) in respect of this work. If this were not done, then factors of production would be supplied to a non-operating account and the simple rules for constructing the index numbers would have to be changed. Of course, it would always be possible to do this, but it would then be less easy to see the principles on which these rules rest.

It has been tacitly assumed in the treatment given in this paper that provisions for depreciation are unilateral transactions, with the consequence that the product and expenditure concepts considered are gross of these provisions. In principle it would be possible to treat provisions for depreciation as transactions in non-factor services, namely those rendered to production through the wearing out of real assets. In practice, the difficulties of obtaining indicators of this form of input would seem to be considerable and, in fact, comparable to the difficulties already referred to in the case of factor services. For this reason no attempt has been made here to work out the details of this alternative treatment.

[1] Stock depletions are treated as negative sales from operating account to capital transactions account, and sales of scrap machinery are treated in the same way.

7. The Treatment of an Open Economy

Transactions with the rest of the world may be represented in a matrix of transactions by the last account in each sector. Alternatively, transactions in goods and services with the rest of the world may be recorded by adding a further sector of n columns and mn rows to $\mathbf{W}$ and $\mathbf{\Omega}$ and by making appropriate adjustments to the other matrices. The goods and services which appear in these extensions are treated asymmetrically, that is to say exports appear among final expenditures while imports appear among intermediate inputs.

Accordingly, the vector $\boldsymbol{\eta}$ in (32) must be redefined so that it has units in the rows corresponding to the accounts for the rest of the world, and corresponding changes have to be made in the later manipulations. This makes the algebra slightly more complicated, but does not affect the validity of the rules that have been set out.

8. Aggregates not Entirely Composed of Goods and Services

When the price and quantity components of a money flow cannot be distinguished in principle, the method of deflation discussed in the previous sections cannot be applied. Comparisons of such aggregates in real terms is only possible on the basis of some theory or convention; this may best be investigated by considering a number of simple examples.

First, consider a two-sector model the transaction matrix of which has only two non-zero elements, national expenditure and income.[1] Expenditure may be expressed in terms of base-year prices, and the deflator derived from this computation may be applied to the income figure. If this is done the deflated accounts will balance, since the same deflator has been applied to all the elements of a set of accounts which were originally in balance. Of course, if it were thought possible to express in quantity terms the factor services comprised in income, then in general the deflated values of income and expenditure would not be equal owing to changes in the productivity of the factors.

Secondly, consider the more complicated case in which there is a third sector in the model to handle capital transactions and

[1] Further discussions of this and subsequent examples may be found in "Simple Transaction Models, Information and Computing," by Richard Stone, in *The Review of Economic Studies*, XIX, No. 2, February 1952, especially pp. 71–5.

in which expenditure is subdivided between consumption expenditure and real asset formation while income is either spent or saved. In addition to finding a deflator for income (which may be achieved as in the first example) it is necessary to find a deflator for saving. For the latter it might be thought relevant for certain purposes to use the deflator for consumption, on the grounds that the consumer could have spent all his income had he so chosen. If this is done, the deflated values of consumption and saving will no longer be equal to the deflated value of income. The deflated accounts will balance only if saving is deflated by the deflator appropriate to real asset formation. In practice, the choice between these two methods of deflation will depend upon the problem under investigation.

That deflation by the method of making accounts balance in real terms is essentially arbitrary from an economic point of view is apparent on considering a further example in which there is a sector for international trade and in which the international transactions are restricted to imports, exports and net lending abroad. The deflated value of the balance of payments on this principle will have to equal the difference between the deflated value of exports and the deflated value of imports. This will yield an implied deflator for the balance of payments the magnitude and sign of which depends on changes in the prices of internationally traded goods weighted by the import and export values of these goods in the base period.

In these simple cases the deflation of aggregates so as to preserve balanced accounts leads to figures of doubtful economic significance. In the case of Nn accounts it can be shown that, in general, a further arbitrariness is introduced. The problem of determining the deflated values of a number of items so as to preserve balanced accounts is formally equivalent to that of determining a number of unknown items in a set of Nn accounts given the remaining items and the $(Nn - 1)$ independent accounting constraints. At the most it will be possible to estimate $(Nn - 1)$ residuals. The necessary and sufficient conditions under which this can be done have been set out elsewhere by Stone,[1] but may be repeated here for convenience.

> "First, one of the unknowns must not appear in the leading diagonal of the matrix [of transactions], since the only place where such elements appear is on either side of

[1] See "Social Accounting, Aggregation and Invariance," by Richard Stone, in *Cahiers du Congrès International de Comptabilité*, (1948) and reprinted (in French) in *Économie Appliquée*, tome II, no. 1, January–March, 1949, pp. 35–6.

a single relationship. Second, two unknowns must not appear as reflections about the leading diagonal of the matrix since in this case the two unknowns cannot be obtained from either of the two (not independent) equations into which they enter. Finally, the unknowns must not be so arranged that a whole row and corresponding column do not contain a single unknown since if this is done one constraint is not used."

Only if these conditions are fulfilled will it be possible to find unique values for the unknowns. If these conditions are violated it will be possible to find a multiply infinite number of values for the unknowns which satisfy the accounting constraints; the multiplicity, in terms of the theory of networks, is equal to the number of closed loops in the network formed by treating the accounts as nodes and the unknowns as branches.

In general, there is no reason to think that aggregates of the unrestricted kind considered in this section will be so arranged as to satisfy the above conditions. Under these circumstances the computation of deflated values will be arbitrary in the further sense indicated in the last paragraph.

9. Conclusions

The main conclusions of this paper can be summarised as follows:

(1) The $Nmn \times Nn$ transaction matrices $\mathbf{W}$ and $\mathbf{\Omega}$ which specify, respectively at market prices and at factor cost, the value of sales of each good or service from each account to each other account can at once be transformed into one another if the rate of net indirect taxation on each good and service is known. The connecting equation is (28).

(2) The $Nn \times Nn$ transaction matrices $\mathbf{w}$ and $\boldsymbol{\omega}$ which specify, respectively at market prices and at factor cost, the total value of sales and of purchases of goods and services between accounts cannot in general be transformed into one another. The special cases in which this can be done are—

(a) if the rate of net indirect taxation is the same for each good and service, that is if net indirect taxation is always a given proportion of net output; and

(b) if sufficient restrictions are placed on the distribution of sales of different goods and services by each account to all other accounts to permit $\mathbf{W}$ (or $\mathbf{\Omega}$) to be expressed in terms of $\mathbf{w}_{\cdot}$ (or $\boldsymbol{\omega}$).

(3) If information is available on the elements of the price and quantity matrices $\mathbf{p}$ (or $\boldsymbol{\pi}$) and $\mathbf{Q}$, then quantity index numbers of net output for industries and for the economy as a whole and of final expenditures on groups of goods and services and their totality can be constructed. If the same price matrix is used in constructing these index numbers, then in principle the variations in the index numbers of total net output and of total final expenditure will be identical. In practice, the two index numbers may be expected to show similar but not identical movements, the discrepancies being due to imperfections of data and to inconsistencies of treatment.

(4) If the net output index number is constructed with factor-cost weights while the final expenditures index number is constructed with market-price weights (or vice versa), then it will be impossible to transform one into the other unless the rate of net indirect taxation is everywhere the same. If this condition is not fulfilled, as in practice it will not be, then both index numbers must be constructed with the same type of weights if the discrepancy due to imperfections of data and inconsistencies of treatment is to be ascertained.

(5) If all quantity index numbers are base-weighted aggregatives, then, as is well known, a consistent system of price index numbers is obtained by the use of current weights. This proposition holds true if the words quantity and price in the last sentence are interchanged.

(6) An additive measure of productivity in an industry is obtained by relating the change in the net output to the change in the factor input, both at constant factor costs. An additive measure cannot be obtained by relating the change in gross output to the change in the input of goods and services of all kinds, both at constant factor costs.

(7) The extension of the system described here to a degree of complexity necessary to represent an actual economic system gives rise to endless practical problems which constitute the main difficulty in the construction of index numbers, but it does not give rise to problems of principle which would invalidate the system described in this paper.

(8) The removal of the assumption of a closed economy requires a new definition of $\boldsymbol{\eta}$ which reflects the asymmetry of imports and exports in the national accounts.

(9) If the matrix of transactions contains all transactions and not only transactions in goods and non-factor services, then in certain simple cases a unique system of deflators can be found

which will preserve the balance in real terms of the accounts of the system. These deflators are, however, necessarily based on conventions which render the deflated series of little use for analytical purposes, and they are, in a sense, arbitrary.

(10) In the general case of the deflation of a matrix containing all types of transaction it is not possible to derive a unique system of deflators. Instead, systems are derived which depend on a set of arbitrary parameters equal to the number of loops in the network formed by treating the accounts (Nn in number) of the system as nodes and the required deflators as branches.

RICHARD STONE
S. J. PRAIS

Department of Applied Economics,
Cambridge.

PRODUCTIVITY IN AN EXPANDING ECONOMY

I

THE purpose of this paper is to analyse the contribution which productivity increases have made to the remarkably rapid rate of growth of the Canadian economy over the past two decades. Estimates of productivity are made in terms of real gross national product [1] per employed person and per man-hour.

The volume of G.N.P. increased more than one and a quarter times in the period 1931–49, *i.e.*, at the compound rate of 4·7% per annum. The greater part of this increase can be attributed to a rise in productivity, but other factors have also contributed to this rapidity of growth. These include the continuous rise in the labour force, the large decline in unemployment and favourable changes in economic structure on a scale only possible in a rapidly expanding economy. The rate of growth and the relative importance of the factors contributing to it have differed widely in the two halves of the period considered.

II

1931 was chosen as a bench-mark for our productivity estimates because it was a census year for which data are available on the labour force.[2] It would have been better to have taken a year in which the effects of the depression could not introduce a cyclical influence into a study of secular growth, but this could not have been done without bringing considerable error into the estimate of the labour force. The period has been divided into two parts, with 1941 as the dividing line.

Between 1931 and 1949 there was almost a fourfold increase in G.N.P. measured in current prices. For the present purpose it was necessary to find the increase in volume, and G.N.P. was measured in terms of 1931 prices. The Dominion Bureau of Statistics has produced estimates for the year 1949 in 1939

[1] Henceforth referred to as G.N.P. The concept is used here in a sense that includes the account known in Canada as gross national expenditure. Cf. *National Accounts Income and Expenditure Preliminary 1949* (D.B.S., Ottawa, 1950), Table 2. In the United States the account is called gross national product. Cf. *National Income Supplement, Survey of Current Business* (U.S. Dept. of Commerce, July, 1947), Table 1, p. 2.

[2] The decennial census of population was the only reliable source on the labour force until November 1945. In this year the quarterly *Labour Force Bulletin* was inaugurated by the Dominion Bureau of Statistics.

dollars,[1] and our deflator corresponds very closely to the official one in the period in which the two overlap.

The items, "consumers' expenditures" and "government expenditures" were deflated by the cost-of-living index, and the rest of the total by the wholesale-price index.[2] The *rationale* of treating government expenditures in the same way as those of consumers is difficult to establish on any other grounds than *faute de mieux*, and the imperfection of this procedure particularly affects the validity of the 1941 estimate, because of the much greater relative importance of the government sector then as compared with the other two years. This difficulty could be overcome by assuming the productivity of the government sector to be constant. Government expenditures could then simply be subtracted from G.N.P. The benefits of such a procedure would be outweighed by the errors involved in estimating the proportion of the labour force employed by the government.

G.N.P. in Current, and Constant, Dollars

1931	1941	1949	
4,480	8,434	16,074	G.N.P. in current dollars (millions)
100·0	106·2	157·0	price index
4,480	7,942	10,238	G.N.P. in 1931 dollars (millions)
100·0	177·3	228·5	Volume of G.N.P.

Source: G.N.P. in current dollars is taken from the *Canadian Statistical Review* and the *Canada Yearbook*. The price index used for deflation is that described in the text.

G.N.P. in real terms rose 128·5% in the eighteen years 1931–49, 77·3% in the first ten years of this period, and 28·9% in the eight years 1941–49.

III

The proportion of the population in the labour force has remained stable in this period, with a slight disturbance in wartime. Within the labour force there has been a large increase in the degree of employment, which has been almost exactly counterbalanced by a decline in average working-hours, although the working-week did rise at certain stages during the war.

[1] Cf. *National Accounts Income and Expenditure Preliminary 1949* (D.B.S., Ottawa, 1950). The deflator used by the Dominion Bureau of Statistics is constructed in part from unpublished price indices. When our method is applied to the period 1939–49, it yields a figure which differs from the D.B.S. estimates by only 0·6%, although it cannot be assumed that the official deflator, if it were available for the whole of the period 1931–49, would correspond as closely as this with the one used here.

[2] The wholesale-price index and the cost-of-living index were taken from the *Canadian Statistical Review* and the *Canada Yearbook*.

Changes in the Supply and Employment of Labour

1931	1941	1949	
100·0	111·0	130·8	Population
100·0	107·0	130·6	Civilian Labour Force
100·0	121·0	151·3	Employment
100·0	127·6	133·1	Total Man-hours Worked.

Source : Population, the labour force and employment for 1931 and 1941 are taken from the decennial population censuses of these years. For 1949 population was taken from the *Canadian Statistical Review*; labour force and employment from the *Labour Force Bulletin*, No. 11 (D.B.S., Ottawa, 1949), and they refer to the month of June, *i.e.*, the same month that was used for 1931 and 1941. Unemployment amongst wage-earners in 1931 and 1941 was taken to be representative of that in the labour force as a whole. Wage-earners make up about three-quarters of the total. Working-hours were available only for the manufacturing industries, and the movements there were assumed to be characteristic of those for the economy as a whole. Data on hours were taken from the monthly *Man-hours and Hourly Earnings* (D.B.S., Ottawa, 1949) for 1949. The total working-hours for 1931 were obtained by multiplying the employment figure of that year by the average working-hours of 1932, the nearest year for which there are available data. Hours for 1932 and 1941 were taken from the *Canada Yearbook*, 1942, p. 386, and 1947, p. 547.

IV

It is now possible to state the changes in productivity in several different ways, as follows :

Productivity Changes

1931	1941	1949	
100·0	159·7	174·7	G.N.P. per head of population
100·0	165·7	175·0	G.N.P. per member of the labour force
100·0	146·5	151·0	G.N.P. per employed person
100·0	138·9	171·7	G.N.P. per employed man-hour

The most significant ratios for the present analysis are the third and fourth in the above table. They can be re-stated as rates of growth.

Compound Rate of Productivity Increase per Annum

1931–41	1941–49	1931–49	
3·8%	0·3%	2·2%	G.N.P. per employed person
3·3%	2·7%	3·0%	G.N.P. per employed man-hour

The ratio of G.N.P. per employed person showed a very slow rate of growth in the second period because of the fall in working-hours; the productivity per man-hour figure is much more useful, and it also shows a more rapid rate of growth in the first half of the period.

These results can be compared with similar estimates recently made for the United States by the U.S. Department of Commerce for the period 1929–50.[1] In the United States there was a com-

[1] Cf. *Survey of Current Business* (U.S. Department of Commerce, January 1951), p. 7. These estimates are for private industry gross product and exclude the government sector, where productivity is assumed to have remained constant. The labour force was standardised to full-time equivalent workers plus independent proprietors.

pound rate of growth of G.N.P. per equivalent full-time member of the employed labour force of 1·5% per annum, and of G.N.P. per man-hour of slightly more than 2·0% per annum. The rate of productivity growth in Canada has thus been more rapid than in the United States, with G.N.P. increasing more rapidly per man-hour than per man in both countries due to a shortening of the working-week.

V

The rise in productivity can be separated into two components; first, the change in productivity in each separate sector of the economy, which will here be called the rise in "productivity proper"; secondly, changes in the structure of activity which have taken the form of net movements from sectors where productivity is low to those where it is higher. The distinction can be illustrated by a partition formula, as follows:

$$\frac{\Pi_1 - \Pi_0}{\Pi_0} = \frac{\Sigma\left[(\Pi_1 - \Pi_0)\frac{h_0}{\Sigma h_0}\right]}{\Pi_0} + \frac{\Sigma\left[\left(\frac{h_1}{\Sigma h_1} - \frac{h_0}{\Sigma h_0}\right)\Pi_0\right]}{\Pi_0} + \frac{\Sigma\left[(\Pi_1 - \Pi_0)\left(\frac{h_1}{\Sigma h_1} - \frac{h_0}{\Sigma h_0}\right)\right]}{\Pi_0}$$

where Π refers to productivity, h to man-hours and subscripts to time periods.

On the right-hand side of the formula the first component represents movements in productivity, with the structure of the economy remaining unchanged; the second component shows the effect on productivity of changes in structure, with the productivity ratio for each sector held constant; the third component represents the joint effect of changes in the two variables. Its value should be symmetrically apportioned between the first two components: productivity proper equals component one plus half of component three, and the change due to the structural modification is equal to component two plus half of component three.[1]

[1] It should be noted that the total variation is to be explained in terms of the two variables, and it would be a mistake to attribute this third component to some exogenous influence. A formula similar to this has been used by Solomon Fabricant, *Employment in Manufacturing 1899–1939* (National Bureau of Economic Research, New York, 1942), pp. 336–7. He gives three formulæ, in only one of which is the third component symmetrically allocated between the other two variables. The necessity of symmetry where it is attainable within the limitations of the data is not stressed, and the choice of any one of the three formulæ is declared "arbitrary."

Fabricant is interested in measuring labour requirements per unit of output,

The procedure described by the formula could not be carried out in practice because it was not possible to make a direct estimate of the change in productivity proper. The third and second components were compounded and subtracted from the aggregate productivity change. This means that the change in productivity proper was misstated by half the amount of the third component.[1] The economy was divided into eight sectors as shown below, output per man-hour for each of these sectors was calculated for the year 1948 in current dollars,[2] and these productivity figures were used to weight the intersectoral shifts.

Sectors of the Economy by Employment and Productivity

	Employment $\left(\frac{h}{\Sigma h}\right)$			Output per employee (Π)
	1931	1941	1949	1948
Agriculture and Fishing	31·1	29·0	24·1	$1638
Mining	1·5	1·7	1·6	$5960
Manufacturing	16·3	21·2	26·2	$3044
Construction	7·0	6·1	7·0	$2273
Transport	10·3	8·1	8·3	$3085
Trade	10·8	10·7	12·9	$2800
Finance	1·2	1·0	2·9	$5965
Service	21·8	22·2	17·0	$2140
	100·0	100·0	100·0	

Source : The employment figures for 1931 and 1941 are taken from the population censuses for those years. For the later years the *Labour Force*

i.e., the reciprocal of productivity. Because of this he has used relative gross output $\left(\frac{pq}{\Sigma pq}\right)$ as a weight to define the proportionate importance of the different sectors of the economy. Because we are here concerned with measuring productivity and not unit labour requirements, it has been necessary to use employment weights to define sectors of the economy. If gross output weights were used here they would include in themselves the effects of differences in productivity, and would obscure the distinction that is being attempted in our formula. The use of employment weights in the construction of an index of production suitable to serve as a numerator for a productivity index has been discussed in H. Magdoff, I. H. Siegel and M. B. Davis, *Production Employment and Productivity in 59 Manufacturing Industries* (W.P.A. National Research Project, Report S-1, Philadelphia, 1939), pp. 10–18 and 36–40.

[1] In fact, a formula similar to Fabricant's first (and asymmetrical) one was used :

$$\frac{\Pi_1 - \Pi_0}{\Pi_0} - \frac{\Sigma\left[\left(\frac{h_1}{\Sigma h_1} - \frac{h_0}{\Sigma h_0}\right)\Pi_1\right]}{\Pi_0} = \frac{\Sigma\left[(\Pi_1 - \Pi_0)\frac{h_0}{\Sigma h_0}\right]}{\Pi_0}$$

The asymmetry made necessary by the lack of productivity series for individual sectors of the economy is a source of error in the findings. The third component may conceivably be as large as one, and, in extreme cases, greater than both of the first two components combined. The third component will be more important the smaller the degree of correlation between increases in productivity proper and favourable intersectoral shifts. In Canada there seems to have been little correlation, so that the third component is important in this case.

[2] 1948 was chosen as the nearest year to the present for which figures were available.

Bulletin No. 11 was used. The groups have been reclassified: occupation included by the census under the headings "labourers" and "clerical" have been allocated proportionately to the sectors defined here (with the exception of "agriculture and fishing") in accordance with their relative importance. Employees of "public utilities" have been included in "transport" for 1948 and 1949. Output for 1948 was taken from an official breakdown by sectors of net national income. No such breakdown was available for G.N.P. Cf. *National Accounts Income and Expenditure 1942–49* (D.B.S., Ottawa, no date), p. 28.

The increase in productivity due to intersectoral movements was 7·71% in the period 1931–49, 1·16% from 1931 to 1941, and 6·48% from 1941 to 1949. These results can be compared with similar unpublished estimates for the United States made by the present writer. These figures show an increase in national income per employee in the United States because of inter-industry shifts of 4·6% between 1931 and 1949.[1] This estimate rests on a slightly different structural breakdown[2] of the economy. The results are as might be expected, since there is greater scope for productivity changes of this nature in the less mature economy of Canada than in the United States.

If the structural element in the productivity rise is subtracted from the aggregate rise, it can be seen that productivity proper rose 63·99% between 1931 and 1949, 37·74% between 1931 and 1941, and 17·12% between 1941 and 1949. The importance of structural change is much greater in the later half of the period than in the earlier half.

VI

It is not possible to calculate the increase in productivity proper directly, because there are no price indices available to deflate output in separate sectors of the economy. Nevertheless, there is evidence of a wide variation in the rate of growth of productivity in the individual sectors. There is an official index of productivity for the manufacturing sector, which has as its numerator a deflated index of the gross value of manufacturing output.[3] This is not a suitable concept of output from the stand-

[1] It is noted that the rise mentioned here for both Canada and United States is due to net shifts in structure. The suggestion made in the *Survey of Current Business* (January 1951), p. 7, that the change from farming to the non-farm sector in the United States was responsible for 0·5% per annum of the productivity rise in that country is, of course, a reference to a gross movement which would have to be balanced against unfavourable movements in other sectors before the net effect of intersectoral shifts could be appraised.

[2] It should be remembered that the choice of a different level of aggregation in defining the sectors, *e.g.*, a definition of economic structure in terms of $2n$ rather than n sectors, will alter the size of the structural change.

[3] Formerly published annually in the section on manufactures in the *Canada Yearbook*, but now discontinued.

point of the present analysis because the net value content of gross value can fluctuate widely from year to year.[1]

Assuming, for the moment, that the official index is a valid indicator, it is possible to impute the changes in other sectors by subtracting from the estimate for the whole economy the change in productivity in manufacturing weighted by employment. As manufacturing productivity, as shown by the official index, increased by only 2% in the period 1931–49 [2] the implication is that productivity in other sectors has almost doubled. Because of the limitations of the index for manufacturing, it would not be wise to state the disparity in the rate of productivity growth between the manufacturing and non-manufacturing sectors in quantitative terms. But the weight of evidence shows that productivity in manufactures grew more slowly than in the rest of the economy. The writer has made unpublished estimates of productivity in ten Canadian manufacturing industries for the shorter period 1935–48. They cover a fairly small proportion of manufactures (about 10%), which limits their value in this context, but they show an average rise in productivity of only 17·1% between 1935 and 1948. If this be taken as indicative of the movement in manufacturing as a whole, it still leaves an appreciable difference in the sectoral rates of growth. There is some evidence of a similar situation in the United States, where productivity in agriculture has risen more rapidly than in manufacturing in roughly the same period.[3]

[1] Cf. *Index Numbers of Industrial Production, Studies in Methods*, No. I (Statistical Office of the United Nations, New York, September 1950), p. 9. It is suggested here that the most useful concept of productive activity for the purpose of an index of production is that which describes the industry's contribution to G.N.P. This is equivalent to the concept of value added used by the census of manufactures.

[2] This figure was obtained by changing the base of the index given in the *Canada Yearbook* to 1931. It is also possible to deduct from this 2% increase the effect of structural changes within manufacturing, by analogy with the procedure used in adjusting for structural changes in the economy as a whole. In this case the standard industrial classification was used to define sectors within manufacturing. It was found that there was an increase in productivity due to shifts within manufacturing which was enough to offset the slight rise shown by the official index. This implies that there was actually a fall in productivity proper in the manufacturing sector.

[3] Cf. *Monthly Labor Review* (December 1947), p. 652, where figures are given for agricultural productivity in the United States. Productivity rose from a level of 127 in 1925–29 to 192 in 1946, a rise of 51·2%. If the Federal Reserve Board index of production is divided by the index of the number of employed wage-earners, we find that the rise of productivity in manufacturing in the same period was 19·0%. Cf. *Historical Statistics of the U.S., 1789–1945* (U.S. Dept. of Commerce, 1949), pp. 179, 180, and the *Statistical Supplement to the Survey of Current Business, 1949*, pp. 10, 58. It is noted that the F.R.B. index of pro-

VII

It is to be expected that the uneven development of technology will advance the physical product per head in different sectors at different rates and that changes in taste will affect differentially the value of the products of the various sectors. But productivity will also depend on the level of activity and the stage of economic development of the economy as a whole.

In a period when there is considerable unemployment it has been argued that some manufacturing industries may increase their output per man by dismissing less efficient workers and by inducing through insecurity an increased effort of those remaining. Productivity may increase, even though costs per unit of output have risen due to undercapacity use of plant. But some industries will lower output without reducing the number of workers. This may happen because the number employed is fixed for technical reasons, *e.g.*, in railways or power-stations, or it may be because the work-people are self-employed, as in agriculture. In both these cases there is disguised unemployment and productivity will fall. When the level of activity is increased, sectors like this will show a more rapid rate of productivity growth than the rest of the economy. The elimination of disguised unemployment (which is assumed to be most prevalent in certain of the non-manufacturing sectors) may partially account for the rapid rise in productivity in the period 1931–41, in which the economy moved from a low to a practically full employment level (*i.e.*, from 84·55 to 95·67% employment of the labour force). The relative importance, in terms of employment, of sectors such as transport and agriculture has declined, so that the proportionate influence of fluctuations in disguised unemployment on future productivity trends has been diminished.

In an expanding economy with a rapidly growing population and large exploitable resources, economies of scale will arise at particular stages of growth. These economies may be of different types.

There may be economies internal to an industry. These will arise in circumstances analytically very close to the situation described above in the case of disguised unemployment where it arises for technical reasons rather than through the existence of

duction consists to a large extent (58% in 1943) of employment indicators with an adjustment for assumed productivity changes, so that to a large degree the apparent rise in productivity is merely that which has been imputed to have taken place by the construction of the index.

self-employed workers. It might well be that the minimum scale of capital equipment and the minimum number of operatives required for an industry to function at all is large enough to service a large increase in the size of the economy. Sometimes industries and plants are built with an output capacity larger than the proximate capacity demand. This situation will arise when the entrepreneurs or the government body responsible for creating the industry have the idea of economic expansion in mind. The point is well illustrated in the history of North American railroads, particularly those in the west. They were built very largely with the idea of creating economic expansion rather than of meeting existing demands. In more recent times the same is true of hydro-electric power developments. In such cases productivity will rise with economic expansion. It is to be noted that transport is one of the sectors of the Canadian economy which has declined in relative importance with respect to employment. If we assume that its output is a linear function of the level of output as a whole, we can conclude from the decline in employment relative to other sectors that productivity in transport has risen more than average.

External economies will arise when groups of industries or plants are created which are interrelated to such a degree that it is only possible for them to come into existence simultaneously. It may be the case that a particular plant could find a market and function successfully at a certain level of economic development, but that in order to do so it requires supplies of a type that cannot profitably be produced until a higher level of activity has been attained. It might, for instance, be possible successfully to operate an assembly plant for automobiles with a market for fifty thousand cars a year, but it might not be possible to produce the parts required until the capacity of the market had reached five hundred thousand cars per annum. In this particular instance Canada has been able to develop assembly plants by adopting the same technical standards as the United States and has imported the necessary parts. But the large increase in the variety of vehicle types and the enormous expansion of the aircraft industry during the war made necessary the creation of a machine tool industry in Canada.

In the case of economies of the type discussed in the last paragraph the rise in G.N.P. per man associated with their introduction will take the form of an expansion of the more productive sectors, without necessarily increasing the average productivity of the expanded sector. In a rapidly expanding economy there will be

particular phases of growth at which these linked possibilities of development will be bunched, and changes in economic structure will be all the easier because of the possibility of expanding the relative importance of some sectors without the necessity of an absolute decline in others. In the period 1941–49 a large part of the increase in productivity was due to changes in the structure of the economy. The pace at which these structural changes took place was accelerated by the war. External supplies of strategic goods were cut off, and this encouraged entrepreneurs to develop new industries or to expand particular sectors; this situation exerted an influence akin to that of an infant industry tariff. Moreover, the government entered into sectors where the prospect of returns to the entrepreneur was low, either because he could not envisage the complex of new possibilities which the development of a particular sector might bring about, or because he lacked the financial resources required to match such an insight.

VIII

We have emphasised in this study the diversity of the influences which have contributed to the overall rate of growth of the Canadian economy in the past two decades. An attempt has been made to provide some methods by which the importance of these separate influences can be assessed. In Canada the importance of certain specific features of an expanding economy, *e.g.*, the bunched development of structural changes, wide variations in the pace of productivity growth between sectors and the possible existence of disguised unemployment, makes it unwise to assume that there is any one rate of growth which can be regarded as characteristic. Even in countries where the economic structure is more stable and the rate of growth less rapid, *e.g.*, the United States or the United Kingdom, uneven rates of technical advance in the different sectors of the economy will complicate the problem of making a significant estimate for the economy as a whole. The limitations of the analysis should be made as explicit as possible in any estimate of past productivity trends or prediction of the future. The assumption that there is some particular growth rate which is characteristic of an economy and which can be extrapolated for the purpose of prediction is made quite often.[1]

[1] Cf. Nicholas Kaldor, Appendix C to Lord Beveridge's *Full Employment in a Free Society* (London, 1944), p. 395. Here it is stated that the rate of growth in primary and secondary industry in the United Kingdom has been 3% per annum over a period of half a century, and that real national income per man-hour

Such forecasts of growth rates will be most reliable when they are made for component sectors of the economy and subsequently combined to make a global estimate. It is advisable when making such predictions to consider the phase of growth upon which the economy is entering and to predict in terms of a range of alternative hypotheses.

A. MADDISON

St. Andrew's University,
Fife,
Scotland.

has been expanding at the rate of 1·5% per annum over the same period. In spite of the limitations of such estimates, it is assumed that there will be a constant (though modified) rate of growth in the future. The estimates of industrial productivity made for England and Wales by W. Hoffman, *Wachstum und Wachstumsformen der englischen Industriewirtschaft von 1700 bis zur Gegenwart* (Jena, 1940), p. 37, table 6, display a trend with wide variations, even in the period which Kaldor assumes to have been stable. The objections to predictions of this kind seem to have been met more fully in a study made for the United States by J. Cornford, W. D. Evans and M. Hoffenberg, "Full Employment Patterns 1950," part 1, *Monthly Labor Review* (February 1947), pp. 169–71. This investigation benefited from the detailed industry studies of productivity made by the U.S. Dept. of Labor Statistics and from the use of a Leontief input–output table. The assumptions made for the purpose of prediction are stated in detail. The global prediction is arrived at by a combination of estimates for component sectors and industries.

INCENTIVES IN THE BUILDING INDUSTRY

THE substance of this paper is derived partly from material collected during 1950 and partly from my own experience in the building industry as a bricklayer. I worked under pre-war conditions and experienced spells of unemployment ranging from three months to a few days in duration. The second phase in my spell as a building operative began when the Second World War broke out. There was, from 1940, a switch from peace to war-time building requirements and a complete change in the employment situation in the industry. I worked on various military sites under the Essential Work Order, and gained some experience of government-regulated incentive bonus schemes. On returning to civilian life in 1945 I worked on bomb-damage repair work under the much criticised cost-plus system and felt its more insidious effects—a slowing up of my working pace and a general lack of interest in my work. Later I worked on a new housing estate, breaking with tradition and building pre-cast concrete houses. I did not remain long enough in the building industry to gain practical knowledge of post-war-incentive bonus schemes, though I have endeavoured to maintain close contact with operatives who have worked on the schemes.

Although I have striven to be objective in my analysis, a bias may be detected. If this is so, then the influence of my experiences as a craftsman and an operative has been too strong to subdue.

TRADE-UNION ATTITUDE TO PIECEWORK

During a period of strife between craft unions in the building industry, lasting for almost a century, consistent agreement was maintained on only one working rule—opposition to piecework. All unions had rules against it. Piecework or any system of payment by results was forbidden by the Scottish National Joint Council Agreement in 1931. The Working Rule Agreement of the building industry made no provision for payment by results up till November 1947. Some districts of the National Federation of Building Trade Operatives, with the assent of local employers, expressly forbade piecework. The Greater Manchester district ruled "no system of payment by results by whatever

name it may be known shall be allowed"; this rule was rescinded, along with a large number of other local agreements, in 1946. Until 1941 the Amalgamated Society of Woodworkers blacklisted all employers who operated piecework systems.

Building trade unions distinguish between two main types of piecework—subcontracting on a labour-only basis and payment by results. To understand the union attitude to piecework it is necessary to examine the two forms.

1. Subcontracting on a labour-only basis involves the letting out by a contractor of a unit of work at a specified price to a subcontractor who supplies only the labour. The subcontractor may be a single operative who consents to undertake to complete a given amount of work for a price. This is similar to piecework as practised in other industries. In cases where the subcontractor employs labour he usually engages it at time-rates higher than the standard time-rates and endeavours to secure piecework output for time-rates of pay. The subcontractor, who had his counterpart in the butty system in the coal industry, then assumes the obligations of a legal employer. In practice, however, they are often evaded. He frequently has no office, fails to stamp the men's cards and disappears from the job the instant it is completed, owing in many cases substantial amounts of wages, to turn up later in the same role in a different district. Building unions have continually directed their antagonism against this form of piecework. In some districts it has always been prohibited, but it was not mentioned in any National Working Rule until December 1950. Then, in the Settlement on Payment by Results with the National Federation of Building Trade Employers, the unions bartered their co-operation in implementing the P.B.R. schemes for the employers' help in stamping out irresponsible "piecework labour only." The Settlement aimed at effectively controlling this form of piecework. As, however, many members of the Employers' Federation do from time to time take on work on a labour-only basis, it was necessary to distinguish between subcontractors.[1] The Settlement stated that "cases of doubt or difference as to the genuine character of the subcontractor . . . shall be brought before Local Joint Committees (or, where no L.J.C. exists, before the Regional Joint Conciliation Panel) which shall have the primary duty of assessing the merits of each case and dealing with its accordingly."[2] It was not specified in

[1] The London County Council buys all its own building materials and lets its building work out on a labour-only basis.

[2] *The Builder*, December 22, 1950.

the Settlement what the nature of the proof of *bona fides* should be, but some guidance has since been given to responsible committees and panels by the national executive committees of the N.F.B.T.E. and the N.F.B.T.O.[1]

2. Systems of payment by results which workers in the building industry experienced before 1941 provided no guarantee for a minimum wage. Wages were, under these systems, directly related to output. Then a change of practice occurred, that, of all things, has been more responsible than anything else for the subsequent acceptance by operatives of incentive bonus schemes. In the face of determined trade-union opposition the Government introduced a system of payment by results and enforced it by the Essential Work Order (Building and Civil Engineering) No. 822.[2] Although the unions regarded the Order as a means of introducing piecework, there was an important difference between it and pre-war practice. The Government assured the unions " that no worker under the scheme would receive less remuneration than he would receive under the existing agreements or under the guaranteed pay provisions of the Essential Work Order." [3] Unauthorised departures from the scheme were not recognised by the Government, and builders and contractors not operating on sites scheduled under the Order were required, as a condition of holding their certificate of registration, to abide by National Joint Council decisions.

To bring about an effective implementation of the scheme, Regional Payment by Results Advisors were appointed by the Ministry of Works to cover the whole of Great Britain. They worked in conjunction with regional and site representatives of the operatives' and employers' federations to resolve difficulties which arose from the application of the scheme. A number of the objectionable features of pre-war piecework were absent. As the rates were calculated by government officials, unequal bargaining between individual operatives and employers was avoided. The scheduled rates accounted for the fact that the average age of operatives was higher than during peace-time, and, that, therefore, the working pace of the operatives would tend to be lower. A working week of forty-four hours and a minimum wage of forty-four times the hourly rate were guaranteed the operatives. There was no fear of unemployment, the standard of work required on the temporary war-time buildings was not exacting,

[1] *The Transport and General Workers' Union Record*, July 1951.
[2] See " The Defence of the Plain-Time Rate System," N.F.B.T.O., 1941.
[3] *Essential Work (Building and Civil Engineering) Order*, 1941.

and the friction which pre-war piecework generated between operatives was lessened by the fact that they felt they were working for a common cause.

Nevertheless, the war-time P.B.R. scheme did not remove all the operatives' inhibitions regarding piecework. But it did condition their minds to an extension of the scheme, and in providing a bonus in addition to time-rates of pay it set an example which post-war schemes were to follow.

The unequivocal objection which building unions made to the war-time scheme determined their immediate post-war policy. In 1941 the N.F.B.T.O. stated "that the abandonment of all piecework should be fairly easy after the war, because we have so strenuously contested every inch of ground, yielding only when compelled, but abating no whit of our propaganda against all forms of piecework." [1] The Government made it clear that the scheme was a recognised change of practice, to cease on the close of hostilities. The Essential Work Order was abolished in March 1947.

In October 1946 the operatives' side of the National Joint Council for the Building Industry submitted a claim to the Council for an increase of 6*d.* per hour on the basic (Grade A) rate. No agreement was reached, and the matter was referred to the National Arbitration Tribunal for settlement. On February 17, 1947, the Tribunal rejected the claim. A fresh approach was made to the employers' representatives, who stated that they were unable to consider any further improvements in wages unless they were directly linked with increased production. The National Federation of Building Trade Employers advised its members that it favoured the operation of systems of payment by results and that standard rates of wages should be observed as a basis. On July 17 the Minister of Labour convened a meeting of representatives of employers and operatives and submitted the proposal that "both sides should consider the introduction of a system of incentive payments to give 20% above a basic rate of 2*s.* 9*d.* per hour." This was an increase of 3*d.* per hour on the basic rate. Both sides agreed to submit the proposal to their respective organisations with a recommendation that it be accepted. Both employers and operatives accepted the proposal.

The National Joint Council for the Building Industry then published *A Settlement Regarding Incentives and Wages, etc., October 1947* which set out the conditions to be observed in con-

[1] *The Defence of the Plain-Time System*, p. 30.

nection with the proposed incentive bonus schemes. This constituted a new National Working Rule which became operative on November 16, 1947. The arrangements were to be regarded as experimental and subject to review at the end of two years. The Ministry of Labour estimated that during the experimental period the percentage of all workers in the building and contracting industry engaged on piecework had increased from 2 to 6.[1] After discussions lasting for over a year the employers' and operatives' representatives on the National Joint Council for the Building Industry agreed on the extension of P.B.R., and on December 15, 1950, they published a second Settlement with the approval of the Minister of Works. For the first time in their history the unions agreed in principle to relate wages to output wherever possible. The Settlement gave piecework a permanent place in the wage-structure of the building industry. It did not attempt to lay down precise and detailed schemes on a national, regional or even a local basis, but stated that new machinery in the form of regional joint advisory panels was to be set up to give guidance to employers and operatives on the initiation and operation of schemes. It would be permissible for operatives and employers to bring disputes relating to incentive schemes to the notice of the panels.[2]

Incentive Schemes

For incentive schemes to work effectively a number of conditions are necessary :

1. In the building industry trade-union objections to piecework are based mainly on the fear of rate-cutting and of unemployment and on the effects which it has on the qualitative result of their work and the social solidarity of their working groups. It is necessary for the causes of these objections to be removed.

Piece-rates, even when determined by time-study engineers, are arbitrary rates. If they favour operatives, then employers will endeavour to cut them. Though rate-cutting is a form of disinvestment, because it reduces both the ability and willingness of workers to undertake continual hard work, it was widely practised before the war. And as unions had proscribed piece-

[1] *The Ministry of Labour Gazette*, October 1950. The proportion of establishments with wage incentive schemes other than straight piecework in April 1950 was estimated at 27%.

[2] *The Builder*, December 22, 1950.

work, the only means of protection available to workers on building sites where piecework was enforced was " ca canny " in the belief that as when output increased rates were lowered, then so they should be raised when output decreased. The most effective safeguards, however, have resulted from trade-union participation in incentive bonus schemes. The 1947 Settlement, by guaranteeing operatives on P.B.R. schemes a basic time rate of pay irrespective of bonus earnings, retained for unions the right to bargain collectively for their members and yet left the determination of piece-rates to men on the sites. The Settlement also made provision against indiscriminate rate-cutting by stating that a target and bonus payments relating to it should be fixed beforehand, then agreed with employees concerned and not changed unless there occurred a material change in circumstances.

Undoubtedly one of the most important objections which building operatives held against the introduction of piecework was the fear they had of working themselves out of a job. Before 1939 this fear was real. The casual nature of employment required that there should be a large reserve of building labour. At the end of each contract a number of operatives were compelled to enter this competitive labour market. The results were paradoxical. Operatives objected to schemes which speeded up work, and even adopted restrictive practices to prolong work. Yet they were compelled to work hard and efficiently in order to retain their jobs until the end of the contracts. In the main, with strict supervision on the job and a large number of men at the gate, incentive schemes were superfluous as means to increased output.

In the building crafts the influence of purely æsthetic motives is important.[1] Craftsmen deplore the introduction of methods which sacrifice quality for quantity. On contracts where P.B.R. schemes are operating there should be a strict supervision of the quality of the work. I have worked on war-time incentive bonus schemes where the quality of the work was poor and ignored by the clerk of works, and the effect on the operatives was degrading. If such practices are permitted and encouraged by systems in peace-time, then the social costs to the community, in terms of increased slum dwellings, will be high. On one large post-war housing estate where payment by results was operating and quality supervision was lax, a maintenance gang worked full-time only four months after the completion of the first house. It needs

[1] C. A. Mace, " Human Problems in the Building Industry," *Occupational Psychology*, January 1950.

little imagination to picture this estate in ten years time. To pick extreme examples of bad-quality workmanship resulting from uncontrolled incentive bonus schemes is no condemnation of incentive bonuses. They merely illustrate what can happen when the desire for increased production is allowed to run away with itself, and suggest that it is worth retaining some element of craftsmanship in the production of houses, even at the expense of output measured regardless of quality. The employer who asked me, after the war, whether I could build a corner without a plumb-rule and set bricks with the line up seven courses at a time typifies a state of mind that can have no place in an industry which is looking to scientific calculation in order to increase productivity.

Under organised P.B.R. schemes there is a tendency for operatives to work in gangs which specialise in performing certain tasks such as pointing brickwork, hanging doors, etc. Within the gang there might even be a greater subdivision of labour. It is my experience that it is not possible for a craftsman of the hand to retain a continual interest in a single simple operation. While his adeptness at performing the task may improve, his craftsmanship, after a point, deteriorates. When the stage of complete disinterest is reached and there is no machine to set the working pace, productivity in the building industry will decline as a consequence of specialisation.

In many instances the nature of the work in the building industry brings workers together in gangs, and the manner in which they achieve a social solidarity is something of which they are justifiably proud. I invariably moved from site to site with at least one other bricklayer; frequently three or four of us moved about as a gang. We were not a formal working gang; we liked each other's company, and we had evolved those common practices which make work easier and which, according to the late Professor Elton Mayo, have by far the most important single effect on output. This was not an uncommon occurrence. A field study of building operatives undertaken in 1946 revealed that "on all sites there was a feeling of group solidarity and of good companionship . . . among members of the same trade or gang." [1] Factors which tended to break up these gangs were resented by workers. Pre-war piecework was such a factor. It is not necessary, however, for friction between operatives to occur under organised systems of P.B.R. The formation of

[1] N. M. Davis, "Attitudes to Work, etc.," *Brit. Journal of Psychology* (General Section), March 1948.

informal working groups should be encouraged and, once formed, they should be changed only when there is no alternative to change. Too frequently they have been broken up by unwise management, thus causing bad feeling between management and men. The inability to form harmonious working groups on building sites can adversely affect productivity by generating a feeling of restlessness and reducing the social incentive to work, which, it should be realised, is derived from the relationship between management and groups as well as from groups themselves.

2. A given amount of effort or skill must be sure to produce a given result. This is difficult to achieve when the whole productive effort depends almost entirely upon hand craftsmen. In all building crafts there are different grades of craftsmen, and as, under conditions of full employment, firms must retain men of all abilities, there will, on any one site, be a wide variation between the outputs resulting from a given amount of effort from different craftsmen.

3. The target set should not take too long to achieve, and the gap between expending the effort and receiving the bonus should be as short as measuring and costing the work will permit. Otherwise the operative may feel that his bonus is not properly related to his output, and the incentive to exert himself may be lessened. This means that operations in the construction of a building must be broken down into stages which can be completed within a given short period. The operative then knows exactly what has to be done to earn a bonus. A Direct Labour Co-ordinating Committee for Local Authorities reporting on incentive bonus schemes stated that where the system in operation is based on the saving in actual on the approved estimate the scheme has to be almost complete before bonuses can be paid, and that such a scheme does not apparently have the full incentive effect to be psychologically popular. A scheme arranged on a weekly basis to allow for complete work to be measured, bonused and paid one week in arrears to the actual wages for the work "resulted in a very considerable increase in the rate of production." [1]

4. The product must be easily measurable in simple quantitative terms. The mixture of quality and quantity in a large number of building operations makes this difficult to achieve. The higher the standard of work required, the more difficult it is to pay an operative in proportion to his output. No adequate means have been found for measuring maintenance work; consequently 52% of all operatives employed in the building industry

[1] Direct Labour Co-ordinating Committee Report, August 1950.

cannot directly participate in wage-incentive schemes.[1] Further, if the terms of measurement are not easily understood by operatives they might lose the confidence in the schemes which is essential for their success. The schemes themselves must be simple, involving as little book-keeping as possible. It is not easy for builders who estimate by the rule-of-thumb method and who cannot afford to employ quantity surveyors and costing clerks to achieve simplicity and accuracy. Better to have no schemes at all than inaccurate ones. This principle seems to have been accepted by many builders, for of wage-earners in establishments of less than 100 wage-earners only 4% were being paid under payment by results systems in October 1949, whereas in establishments with 100 or more wage-earners 15% were being paid under such systems at the time.[2] The Ministry of Works and Ministry of Health Survey of Incentive Schemes in Direct Labour stated that "the direct labour forces of local authorities operating incentive schemes were, on the whole, larger than those not operating schemes. While only 43% of direct labour forces employing up to twenty men operated schemes—80% employing over 100 were doing so." [3]

5. In most schemes targets are set and the saving in costs resulting from increased production is divided in some proportion among the operatives. In elaborate schemes the costs of administration have to be met out of this saving, and the percentages retained for this purpose by managements have varied from 5 to 50%. The Direct Labour Co-ordinating Committee reported: "It is considered that the fixing of targets in such a way that the men receive 95% of the saving rather than 50% reacts on the men psychologically as a better incentive."

6. P.B.R. schemes must not be competitive; otherwise there will occur a drift of labour to the highest bidder. It has been reported that builders were forced to pay weekly bonuses in order to retain their operatives because other builders competed for labour by paying bonuses that could not possibly be allied to increased production.[4] Under conditions of full employment P.B.R. schemes can easily become devices for attracting labour rather than means for increasing productivity.

[1] Employed on ordinary repairs, maintenance, war-damage and conversion of houses. In North-east Lancs, where many contractors employ 50% of their staffs on maintenance work in mills they are reluctant to introduce incentives on new work because of the dissatisfaction it would cause among maintenance workers.

[2] *Ministry of Labour Gazette*, October 1950.

[3] Reported in *The Builder*, September 22, 1950.

[4] Letter to the Editor, *The Builder*, December 31, 1948.

7. The success of incentive bonus schemes is difficult to gauge. Results vary from site to site according as the working conditions, size of firm, type of scheme, etc., vary. In a report of a pilot sample survey of productivity in house-building held in the South, East and West of England and South Wales, it was stated that in general the sites which showed the least man-hours were associated with the payment of incentives and that the saving in man-hours was greater, in such cases, than the amount paid as bonus. It stated :

> " There is nothing to show how this saving in man-hours was brought about by different incentive schemes. . . . There is, however, some evidence in the data, that whilst those schemes which were operated on a target basis were most effective in reducing man-hours, the incentive schemes not directly related to output were also effective in reducing man-hours." [1]

No neat distinction can be drawn between schemes, nor even can increases in production on sites where P.B.R. schemes operate be categorically attributed to the operation of those schemes.

Insecurity

The incentive to work is the net result of the interaction of complex factors which act upon each individual. It is difficult even to distinguish between such broad categories as the economic and psychological. The analysis of factors within a particular category lacks precision because of the difficulty of controlled experiment in human affairs; the choice of any factor for study is arbitrary, and the questions which one asks will not admit of definite answers which can be established by the evidence. A study of incentives, then, cannot be conclusive. In the building industry this is particularly so. Here one finds an industry consisting of a large number of individuals performing distinct, often specialised, tasks in different trades under conditions which vary from site to site. The responses of workers performing similar tasks under identical conditions vary considerably. It is too much to expect, then, that the application of incentive bonus schemes in the building industry should result in a uniform response in the desired direction while other factors which influence the will to work are neglected. A guaranteed working week, stability of employment and good working conditions may not by themselves provide the necessary stimulus to harder work; but without them it is doubtful whether monetary in-

[1] *National Building Studies, Special Report No.* 18, H.M.S.O., 1951.

centives will operate satisfactorily for more than a temporary period.

1. The relatively high rates of labour turnover in the building industry, as shown in Tables I and II, are a symptom of the dissatisfaction which building operatives feel. They are, too, partly the result of the casual nature of employment in the industry. But not so much as one would expect. The smaller the length of contract, the greater, it would be expected, would be the labour turnover. The small firms, however, which usually

TABLE I

Labour Turnover in the Building Industry, North-western Region*

Occupation.	Annual turnover, %.
Carpenters and Joiners	42·6
Bricklayers	46·4
Slaters and Tilers	22·5
Plasterers	37·2
Painters	47·8
Plumbers	17·4
Glaziers	32·5
Steel Benders and Fixers	36·0
Apprentice-skilled Workers	40·5
Labourers	148·6
All Building Workers	76·1

* Calculated for one year, February 24, 1949, till February 23, 1950, prior to the revocation of the Control of Engagement Order on March 13, 1950, from the number of vacancies for building workers filled by Employment Exchanges and the estimated insured population for the building and civil engineering industry in the North-western Region based on the exchange of books in July 1948. This was the last year in which all unemployment books were exchanged annually and in which a reliable estimate could be made. The rates are minimum rates, as under the Control of Engagement Order trade unions were approved agencies for placing workers. Also there will have occurred some unauthorised movement of building labour from job to job.

have the short contracts, show more constancy of employment. According to Professor Bowen, in the May 1947 issue of *The Manchester School*, the percentage of "nucleus operatives" employed by small firms, in a sample of seventy firms taken in 1936 to 1938, was very much higher than for the large firms. The contracts which are of a duration of less than a year and which are mainly undertaken by the small firms may not appreciably increase labour turnover. The movement of workers seems to be mainly between large firms, and to be caused by factors other than the completion of contracts.

2. Workers can hardly be expected to associate themselves fully with management in its desire for high productivity under

conditions which guarantee them neither continuity of employment nor a reasonable weekly wage. During inclement weather building operatives can be stood down for a time, put to work again, stood down and so on. Prior to 1941 they received no pay for these stoppages, although a scheme for wet-time insurance, which was accepted by the representatives of workers and employers, had been prepared in 1937. After the First World War

TABLE II

A Comparison of Labour Turnover Rates in Building and the Principal Manufacturing Industries During the Year Ending, February 25, 1950 *

Industry.	Labour turnover, %.
Treatment of Non-metalliferous Mining Products	38·4
Chemical and Allied Trades	26·2
Metal Manufacture	24·9
Engineering and Electrical Goods	28·3
Vehicles	26·6
Metal Goods not elsewhere specified	34·4
Precision Instruments and Jewellery, etc.	29·6
Textiles	33·1
Leather Goods and Fur	28·6
Clothing	29·3
Food, Drink and Tobacco	33·6
Manufacture of Wood and Cork	40·0
Paper and Printing	23·5
Other Manufacturers	37·0
ALL MANUFACTURING INDUSTRIES	29·7
BUILDING	76·1 †

* The rates in the principal manufacturing industries were obtained from the labour-turnover rates for four or five weekly periods published in the *Ministry of Labour Gazette*. The rates, as shown in the *Gazette*, represent the number of engagements per 100 males employed at the beginning of each period.

† This figure is calculated from the returns from the North-western Region. The Region, however, is large and consists of industrial and rural areas, and is, I feel, sufficiently representative of the rest of Britain to make the comparison useful.

building operatives demanded 100% payment for time lost, but neither the Government nor the employers would agree to such a proposal. The employers insisted that any scheme set up should be joint contributory and legally binding upon all persons engaged in the building industry. From 1933 employers' and operatives' representatives co-operated in an attempt to evolve a satisfactory scheme. The result of their co-operation was announced in 1937 in the form of the Building Industry's Supplementary Unemployment Insurance Scheme that was to have been embodied in the Unemployment Insurance Act and made legally binding upon all concerned with it in the building industry. The scheme was joint

contributory, employers were to pay half of the contribution, and the benefit was approximately half of the standard time rate of pay.[1] The scheme was held over on the outbreak of war in 1939.

In 1945 the National Joint Council for the Building Industry adopted a new rule concerning the guaranteed week, to be applied when the Essential Work Order was rescinded. It was that an operative presenting himself for work each weekday regardless of weather conditions should receive payment at his current hourly rate for half the time lost by him by reason of inclement weather during his normal working hours, the total payments not to exceed thirty-two times the hourly rate. This guarantee was to operate for a maximum of two succeeding weeks' work lost through inclement weather. The employers were thus prevented from dismissing workers at the beginning of a bad spell of weather, as had been the practice before the war. This latter clause, however, proved costly to employers, and was amended in 1948. The amendment guaranteed building operatives only one week of thirty-two hours, each week to stand on its own. The employers' power to terminate employment on a Friday regardless of the circumstances again became absolute.

Some Comparison with the Engineering Industry

If piecework systems can be successfully operated in the engineering industry, where methods of production and conditions of work are as complex as the variations between sites in the building industry, then why, it is sometimes asked, cannot they be applied in the building industry?

In the building industry 67% of all operatives are hand craftsmen. Both the quantity and the quality of their work depend almost completely on their own efforts. In the engineering industry apprentice-skilled workers have given way in a large number of trades to semi-skilled workers. The quality of workmanship has gradually become dependent upon the performance of machines, and in some cases it is the machine that determines the amount of effort the worker shall put into his work. There has been an extension of the subdivision of operations in engineering. Given these, the performance of an average worker working with average assiduity, upon which piece-rates should be based, can be more easily and correctly calculated. Piecework, however, became possible on a relatively large scale in engineering only

[1] See *Interim Report on a Scheme for the Payment for Time Lost Through Inclement Weather*, published by the N.F.B.T.O. 1937.

on the introduction of batch-production methods. These require a relatively high degree of mechanisation, processes are broken down into relatively simple operations, the orders for specific products are large but not continuous. Hence some degree of standardisation is achieved and production measurement is simplified, and there is an incentive for workers and management to complete a given order.

The methods of production in the building industry can, in the main, be compared with the pre-batch production methods in the engineering industry. Changes, however, even though slowly, are occurring in building production methods. Relatively large housing estates are being built by single contractors on which a high proportion of the fittings, such as window-frames, doors, sanitary systems, electrical installations and in some cases pre-cast or prefabricated main structures, are standardised. Designs are simplified—post-war architects prefer more straight lines in their designs of large buildings, schools and factories, and this will eventually extend to a much greater extent to house designs. Machines are affecting production by shaping the raw materials to be handled by the craftsmen. In many cases plumbers and joiners are merely assemblers. The use of plaster-boards, the absence of cornices and bullnoses and the greater use of straight lines in plastering have made the plasterer's work simpler. There is still a long way to go before the production methods in the building industry approach those in engineering; but there is some approximation to batch-production methods. And it is where these methods are employed that payment-by-results systems can be implemented with the least amount of trouble and the greatest chance of success.

V. L. Allen

Oxford University Delegacy for Extra-Mural Studies.

REVIEWS

A Study in the Theory of Inflation. By BENT HANSEN. (London : Allen and Unwin, 1951. Pp. xxi + 262. 18*s*.)

DR. HANSEN'S study is an extremely valuable contribution, both to the theory of inflation and to the theory of macro-economics in general. It lies directly in the mainstream of Swedish economic thought, deriving from Wicksellian teachings. Monetary pressure of inflation is considered to exist when there is "monetary excess demand in either the composite commodity market, or the composite factor market or in both these composite markets, so long as neither of them exhibits monetary excess supply." Implicit in this quotation lie both one of the most useful features of Dr. Hansen's system and one of its most important limitations. The strong feature is the distinction which is central to the argument and of which excellent use is made, of a division of the markets in the economy into factor markets and goods markets. The limitation is that practically the whole of the analysis is concerned with cases where pressure to inflation results from excess of demand over available supply. Cost inflation comes up for consideration only fleetingly.

The considerable difficulties involved in the concepts of demand and supply under inflationary conditions, especially when planned purchases and planned production cannot be carried out, are avoided by a set of definitions which is helpful but about which further discussion would certainly be desirable. On the demand side, three classes are distinguished; "planned purchases," which are considered the most probable to be carried out, "optimum purchases," which would be those carried out on a "rational" calculation, and "active attempts to purchase," which may well exceed optimum purchases. Which of these concepts is used in defining the inflationary gap depends upon the purpose for which the analysis of the gap is being used.

Fundamental to Dr. Hansen's theory is the view that a difference between *ex ante* investment and *ex ante* saving is not a suitable indicator of the presence or absence of inflationary pressure in the factor and goods markets. The excess of planned investment over planned saving is equal to the monetary excess demand for factors plus the monetary excess demand for commodities; that is, to the difference between planned purchases of factors (com-

modities) and planned sales of factors (commodities). Now when *ex ante* investment is not equal to *ex ante* saving, *ex post* identity comes about under suppressed inflation through unexpected changes in capitalists' incomes, and through failure to realise purchasing plans. Here lies an important contrast with Lindahl and other writers in the Swedish tradition, for whom purchase plans are always considered to be realised. There are, however, no unexpected changes in workers' incomes, because it is assumed that factor sales plans are always realised, because factors are fully employed.

In the factor market, then, expected sales are equal to the quantity available. But in the commodity markets under inflationary conditions there is a difference between the available quantity of commodities and expected sales of commodities. It is by the difference between planned purchases and the quantity available that the *inflationary gap in the commodity markets* is defined, and by the difference between planned purchases and expected sales that the *ex ante commodity gap* is defined. Considering, then, the simple case of zero stocks and suppressed inflation under perfect competition, the inflationary gap in the commodity markets is equal to the *ex ante* commodity gap *plus* the difference between the quantity of commodities actually available and the sales of commodities that entrepreneurs expected to make but could not, because their factor purchase plans could not be realised in full and so their output plans failed. This difference between commodities available and expected sales consists of the factor gap *plus* the unexpected decrease in incomes suffered by entrepreneurs because they cannot make profits by selling the product of non-existent labour, as they had planned to do.

In terms of this analysis it is quite possible for *ex ante* investment to be less than *ex ante* saving, and nevertheless for there to be a positive inflationary gap in the commodity markets and a positive factor gap. For this and other reasons, Dr. Hansen finds the *ex ante* savings investment relationship to lose its significance as far as the factor and goods markets are concerned, although it remains important for the credit market, with which he does not deal. The analysis is extended to cases where there is monopoly in the commodity markets and to cases of open inflation. The use which Dr. Hansen makes of his apparatus well justifies his argument that a separation into factor and goods markets is necessary, and future discussion of the inflationary gap will owe a great deal to the method of analysis he has employed.

Another group of important contributions to theory concerns the aggregation problem and the integration of micro-economics with macro-economics. Dr. Hansen has erected some signposts which will be invaluable to others concerned with this important problem.

Two main groups of questions about Dr. Hansen's analysis remain. One concerns suppressed inflation. Here one must suppose is a field in which analysis solely in terms of income flows and without regard to assets can only provide half a theory. Unplanned accumulation of paper assets is a likely (though not inevitable) consequence of suppressed inflation, and discussion of the removal of suppression must consider what is happening in the asset markets. The other important question concerns the definition of an increase in the pressure to inflation. This occurs when the monetary pressure of inflation has risen in either the commodity market or the goods market, and has not fallen in the other of these two markets. Analytically this definition is useful, though it is subject to the limitation that it leaves an open indeterminate group of cases, where excess demands have altered but where we can define neither an increase nor a decrease in pressure to inflation. The more important point, however, is that there is a danger, which is not always avoided, of automatically assuming that an increase in inflationary pressure so defined is worse than cases where there is no increase. This is not necessarily so. One can conceive of neutral cases which might be considered more harmful. But be that as it may, there is danger in using a word such as inflation which has a strong emotive significance as a strictly defined technical term, and the theorist has a duty to reduce this danger as much as possible.

One could easily think of topics in the field of inflationary theory that Dr. Hansen has not touched, and which one might well have hoped he could have discussed. That one regrets that he has not written a complete treatise on inflation is simply a reflection of the great value of the work he has done in the extensive field he has covered.

A. C. L. Day

London School of Economics.

Making Capitalism Work. By Dexter Merriam Keeser and Associates. (New York and London : McGraw-Hill, 1950. Pp. ix + 316. 30*s*.)

This is a rather more serious book than its title suggests. Dr. Keeser and his associates in the Department of Economics of the

McGraw-Hill Book Company have attempted to appraise some o the difficulties confronting United States capitalism and to comment on the possible lines of policy. There is a general discussion of the case for preserving private enterprise, which the authors believe to be conclusive, but in the main the book is concerned with concrete topical issues. Some of their arguments and, more markedly, some of their statistics may be open to criticism, but on balance it is a stimulating and useful book, especially because the authors are more inclined than most British writers on the subject to ask whether particular measures can really be reconciled with the requirements of a healthy capitalism. The British reader, familiar with the main features of the middle-of-the-road policy to which Professor Meade has given the title of " liberal-socialism," is liable to be surprised and even shocked by the argument that, even in the United States, taxation is too progressive. Although the authors show that they are well aware of the defects of capitalism and by no means hostile to state intervention in order to remedy them, they warn the reader that " what may seem a promising remedy for some of capitalism's shortcomings cannot be certified until it is clear that it will not backfire in handling others." For their part they are inclined to lay more stress on rising productivity than on redistributive public finance, and they are afraid that egalitarianism may be carried too far. These views, which are clearly very similar to those of Professor Schumpeter, are not merely " capitalist "; they would be accepted readily enough in the U.S.S.R.

One of the first problems to which Dr. Keeser and his associates turn their attention is that of preventing a fall in investment with consequent deflation and unemployment. The authors are inclined to the view that American Keynesians have laid too great stress on the stimulation of consumption to the partial neglect of measures designed to stimulate investment. The need for a large volume of investment is strongly urged, and is supported by some discussion of the extent to which war-time arrears have not been made good (1950), and by some interesting references to new techniques and to the age of the equipment in some important industries. But technological possibilities may not always be exploited on an adequate scale, and the principal danger, in their view, is a shortage of funds. On the face of it, it may appear inconsistent to talk about a shortage of funds when deflation is caused by an excess of (*ex ante*) savings over investment, but the inconsistency disappears when one abandons the implicit assumption that savings are homogeneous and divides

them into those which are and those which are not available as risk-capital. It is a shortage of the latter with which they are concerned, and their argument is similar to that recently advanced, in more formal terms, by Dr. F. W. C. Blom (*Oxford Economic Papers*, June 1951). The authors therefore propose lower taxes on profits, more generous depreciation allowances, less progressive taxation of personal incomes in order to foster savings of the kind which go into equities, and the removal of the prohibition on investment in equities by life-insurance companies, which is enforced by a number of States.

A cut in taxation would obviously be sensible at a time when depression was really impending, provided there was no corresponding cut in government expenditure; but the authors appear to be contemplating a more permanent change. Moreover, they admit that their proposals would have the immediate effect of cutting tax revenue by $6–8 billion, and although they are optimistic about the ultimate bouyancy of revenue if productivity is stimulated, they do not quite face up to the danger that so sharp a change might have caused inflation in the early fifties, even if there had been no Korean War.

I hope the authors will not feel unduly offended if I say that their subsequent chapter on anti-cyclical policies is, broadly speaking, on Keynesian lines. Perhaps the main difference is that the authors give more attention than do some of the writers who are confessedly Keynesian to the difficulty of "timing the action, and deciding how much of it is needed."

The exposition could have been greatly improved by inserting one or two master tables showing both actual figures for the composition of national income and expenditure and hypothetical figures indicating roughly the effect of the changes proposed. As it is, too many figures are quoted in isolation, which makes it difficult to appreciate their significance, and the consistency of their proposals cannot readily be judged without doing a certain amount of arithmetic and preparing some "economic budgets." One feels the need of such tables especially in reading the chapter on "Social Security and Social Welfare." Here they give their support to a wide range of projects, but there are numerous warnings about the danger of advancing too fast and overloading the budget; it is not easy to estimate the extent of the loading without some master tables.

The authors support E.R.A., but they are critical of the lack of self-help in Europe. Such criticism is not entirely unjustified, but on the whole their remarks about Britain are a little one-

sided : if there has been extravagance in state expenditure, there has also been " austerity " and an export drive. They are not, however, uncritical of their own country, and say unequivocally that the United States must " take the initiative in removing the barriers it has erected against foreign goods " (p. 211).

In the interesting chapter on competition it is pointed out that the term is used in different senses by economists and by business-men; the former have their special concepts of " perfect " and " pure " competition, whereas the latter use the term " in the strict dictionary sense to mean rivalry." They add : " in most lines where concentration has grown, few business-men sense any easing of competition as they understand the term. There's plenty of rivalry. While each business-man has more control over prices and production than economic theory envisages as consistent with perfect competition, there is enough competition in most lines to hold prices close to the level which might be expected to eventuate if the economists' idea of pure competition prevailed " (p. 223). If this chapter helps to free us from the analytical strait-jackets of the thirties, so much the better.

Although fairly optimistic about the competitiveness of American industry, the authors support a tough anti-trust policy. They very rightly add, however, that budgetary policy is also relevant : high taxation hampers the growth of new firms and weakens competition. (At this point an unnecessary attempt is made to strengthen the argument by means of a chart, and this chart itself is rather dubious. In general, the authors have too great a respect for simple correlations.) It is, however, in the field of organised labour that " the most difficult problems lie. . . . It is here we find our biggest and strongest monopolies today. . . . John L. Lewis has the personal power to paralyse a major part of the nation's economy." This is unquestionably the case, but a solution is not easy to find. The authors' comments are very brief : they do not offer a remedy but plead that " the tricky problem of equalizing the bargaining power of labour and management should be explored with an objectivity and lack of passion to which it is totally unaccustomed " (p. 236).

Although the authors provide plenty of evidence to show that capitalism is progressive in the materialistic sense, their strongest reason for supporting it is their fear that state ownership and control would destroy liberty. The argument is presented with moderation. It is recognised that capitalism has sometimes restrained liberty, and reference is made to the " company towns " which once existed. It is conceded that on occasions the

state has enlarged, rather than restricted, the scope of individual freedom (p. 256). Such concessions, however, are not held to be inconsistent with the belief that general socialisation would undermine democratic liberty. The danger to private enterprise is enhanced by the fact that the liberty enjoyed under it is so often used by those who form public opinion in order to denounce capitalism and to urge that it be overthrown—a paradoxical situation to which Schumpeter drew attention when he argued that a free capitalist economy contains within itself the seeds of its decay. "Social scientists and businessmen tend to get along together rather like strange tomcats" (p. 264), and novels and films are even more hostile. The authors also point to the odd fact that whereas the high income of a business-man is usually resented, the income—often much higher—of a film star or a footballer is not. These psychological difficulties are discussed in the final chapter, where the authors remind us, in passing, that certain primitive tribes had a special devil whose role was to absorb general abuse for things that went wrong, regardless of the exact cause; they add that: "Capitalism needs some twentieth-century equivalent of this special devil, commissioned to give our labour leaders full scope for excoriating the going state of affairs without making capitalism the goat" (p. 263). For their own part, though not uncritical of capitalism, they prefer it to the alternative of an extension of the governmental process which involves the offer of "power as a principal reward to those who apply themselves to it seriously." They clearly sympathise with the refugee from behind the Iron Curtain from whom they quote: "What a delight to be where things are produced and sold with such a nice clean motive as making a profit" (p. 260).

T. WILSON

University College,
Oxford.

Industrial Pricing and Market Practices. By ALFRED R. OXENFELDT. (New York: Prentice Hall Economic Series, 1951. Pp. xii + 602. $4.75.)

AMONG the many questions studied by economists the problem of market-price formation seemed until recently to be the only one in which neo-classical and modern (non-Marxian) economic theory had reached a methodologically most refined and—as far as the results were concerned—an almost accomplished and unassailable stage. This idyllic picture was severely shaken by

the realistic studies of Hall and Hitch in Britain and similar pioneer work in the United States, such as the investigations of Professor Hamilton and the Conference on Price Research of the National Bureau of Economic Research, which have thrown considerable doubt on the relevance of the elaborate theoretical framework for an explanation of actual prices.

The full impact of these empirical studies, which are still few in number, will probably only be felt in the future; Mr. Kalecki's economic essays represent an early attempt to bring theoretical cost and pricing assumptions more into line with actual business practice. In the meantime there is a danger that on this question economists will—as they have done before on other questions—fall into two rigid "schools" of realists and theorists who will fight each other on "principles" rather than finding a way out of the present dead-lock. The beginnings of such a line-up could be seen in the Lester–Machlup controversy on marginalism in the pages of the *American Economic Review* in 1946–47.

It is a great advantage of Professor Oxenfeldt's book that it does not try to enlist the student or the general reader, who wants to get information on how prices are formed and influenced, as a partisan for the "realistic" or "theoretical" approach. On the contrary, Professor Oxenfeldt lays before him in clear and lucid language both the results of economic theory and a wealth of information about actual market forms and price-determining factors in the American economy. If the reader comes to the conclusion that the two sides of the picture—the marginal-cost pricing of pure theory and the prevalent cost-plus pricing in practice—do not always fit together, he will at least have a fair idea of the present state of the debate. The nature of the material brings it about that the description of actual pricing practices —reinforced by two intensive case studies of whisky and steel prices—takes much more space than the analytical parts. But the sections on theory contain most of the ruling ideas, even though they avoid the more difficult and refined forms of exposition. Theoretical considerations are also applied to situations which are usually neglected in ordinary text-books, such as the probable effects on price if one or several firms in a vertical chain are monopolies.

The subject chosen by Professor Oxenfeldt—prices, competition, monopoly—has, of course, for long been a favourite one in American economic literature. But a new treatment is always justified and welcome if it illustrates its thesis with the help of more recent facts and on the basis of the latest literature. This

condition is amply fulfilled by Professor Oxenfeldt, who takes many of his examples from the post-war period, making wide use not only of the newest academic and book literature but also of material contained in the *New York Times*, *Business Week*, *Printers' Ink* and other business papers. He also draws, of course, heavily on that unique and inexhaustible source of information—the T.N.E.C. Hearings and Monographs.

From what has been said it should be clear that Professor Oxenfeldt's book can serve equally well as an excellent introduction into the whole problem of industrial prices (including all monopolistic practices and government measures influencing price) and as a useful reference book. This becomes not less true even if one adds, for the sake of completeness, one or two critical remarks. Thus it is a trifle irritating to find Professor Oxenfeldt, who on the whole speaks a very detached and "modern" language, representing—with certain reservations—money costs as equivalent to pain or sacrifice. A phrase like "pains incurred in production, measured by the average cost curve A.C." (p. 98) sounds, to say the least, rather out-dated.

A slight weakness of the book is that its extensive lay-out leads to a certain amount of duplication. Particularly in the chapters on "Intra-firm Price Influences" (Chapters 3–5) and "Inter-firm Price Influences" (Chapter 6) we find more or less identical situations viewed from different angles. Thus on pp. 194 ff. price imitation is discussed as a firm's method of setting prices, while a hundred pages later (pp. 290 ff.) we come to a discussion of price leadership as the outcome of a certain industrial pattern. But obviously, price imitation and price leadership will in most cases be two aspects of the same pricing situation which could be conveniently discussed together. Similar duplication can be found in the treatment of stable price policies, relations between rivals, etc. This duplication would in fact prove tiresome, were it not for the numerous illustrations used by Professor Oxenfeldt which constantly keep the interest alive and add new lights to the subjects under discussion.

Finally, I would like to add a remark which is not in the least directed against Professor Oxenfeldt's book as such but is just occasioned by it. This book, which deals only with prices and marketing practices, runs into 600 pages. There is no doubt that they have been well used. But 600 pages have become the "optimum size" (or rather the representative size) of American economic texts, whether they deal with wages, business cycles, international trade or any other special field of economics. One

begins to wonder what this *general* inflation in the size of text-books involves. (There is, of course, no objection against *some* books reaching 600 or even 2,000 pages—doubts arise only when it becomes a general habit.) Does it mean that American students never read a book from cover to cover? Or does it mean—an equally terrifying thought—that they *do* read all these voluminous specialised text-books from cover to cover?

K. W. ROTHSCHILD

Österreichisches Institut für Wirtschaftsforschung, Vienna.

A Course in Applied Economics. By E. H. PHELPS BROWN. (London: Pitman, 1951. Pp. viii + 434. 25*s*.)

THIS is a most stimulating and unusual book. Professor Phelps Brown begins by asking himself and his readers what exactly is the meaning of applied economics. His answer, if I have understood him right, is that it includes the whole range of economics between the purest of pure theory at one end and actual policy-making decisions at the other. While he firmly denies the competence of the economist to produce easy and ready-made answers to particular problems, in the tradition of Harriet Martineau and Mrs. Marcet, he does regard it as a main function of the applied economist to discover just why things have happened in particular ways in the past, in order that they may make their contribution to the much more difficult task of affecting happenings in the future—more difficult because human beings are human and in some degree unpredictable, and because they are sensitive to experience so that their reactions to an identical second stimulus may be different from their reactions to a first stimulus.

If the applied economist is properly to fulfil his functions, it is his task, therefore, to examine a real world situation in all its complexities, to select from those complexities the limited range of factors which form the essential and important components of a particular situation, to create or adapt an economic model containing those components and to study its workings, to derive such lessons as are appropriate from the working of the model, and finally to apply those lessons to the real world situation in the form of suggested changes in the institutional set-up or in the methods of operation of given institutions.

Professor Phelps Brown would regard the pure theorist, as I understand, exclusively as a maker of analytical tools and models.

It is for him to see how certain particular factors might work their effects out if they could be assumed to operate in the complete vacuum of *ceteris paribus*. The practical unlikelihood—conceivably even the practical impossibility—of the existence of such a complete vacuum should not deter him. He is, or should be, solely concerned with creating an apparatus of thought for the use of the applied economist.

But obviously the techniques of applied analysis that were indicated above may go wrong at very numerous points. The individual applied economist, insufficiently equipped with historical or critical faculties, may overlook some absolutely essential component of the situation that is being examined. He may make unconscious assumptions about motivations, expectations, degrees of competition in the construction of his model which conflict with the realities of the past, present or probable future real world situation. He may misunderstand the precise workings of a given institution and misjudge the extent to which a particular consequence in history derived from a particular institutional set-up. He may misjudge the power of a changed institutional set-up or a changed policy in its working to effect a required cure. But above all, in order to make his theoretical model workable, he may be tempted to make it much too simple, and (as so often happens) may leave his critics completely unsatisfied as to the adequacy of the argument by which they are instigated to seek certain reforms. Professor Phelps Brown himself is at his best in seeing very clearly the difficulties of extending theory and model-making up to the point where prediction can become even reasonably credit-worthy, and the difficulties also of analysing real-world situations so thoroughly as to ensure that all the relevant factors of any sufficient practical significance have been included. He is admirably cautious and level-headed just where over-enthusiastic model-makers are most rash.

Having seen what are the essentials of applied economics, Professor Phelps Brown proceeds to take us on a brief experimental run over a part of the country. It is a necessarily selective run, confined to five main problems: monopoly power and public policy regarding it; the supply and demand for factors of production; the pricing system under collectivism and in relation to public enterprise; the analysis of fluctuations and stabilisation policies; devaluation as a remedy for a balance-of-payments deficit. The section on fluctuations and stabilisation is in many ways the most interesting, because Professor Phelps Brown's

predecessors have done most here in the way of model-making, and the various steps of his ideal technique are most clearly evident. But a stern critic would, I think, feel inclined to argue that, admirably as Professor Phelps Brown brings out the limitations of certain models and the probable effects of making allowance for those limitations, there do remain substantial gaps, first where the sufficiency of the model requires demonstration and finally where the possible inferences from the models have to be made.

The section that deals with monopolies and public policy is full of wisdom, and I have read it with great profit, but I do not think that this is a part of the field where the essential techniques can be most profitably demonstrated. History, institutions, political and ethical value-judgments are all of such dominating importance that the difficulties are in the main moral rather than intellectual. Perhaps it is well that one large problem of this character should receive full treatment. But one cannot feel that a solution of these problems could be greatly hastened by a supreme intellectual contribution, as one does feel in regard to some of the major problems of internal and international stabilisation. Apart from these stabilisation problems, the essential techniques are most clearly demonstrated in the analysis of factor rewards and, in particular, in the discussion of the possible vagaries of the supply curve of effort; this is very well illustrated not only by figures of payment and output of coal-hewers in Northumberland and Durham in the 1870s and of prices and output of farm produce in New Zealand in the 1930s, but also by diagrammatic analysis and discussion.

If I may try to sum up the book as a whole, I think its chief value, and that a very considerable one, is that it will help to make some of us who had been groping in this field a little more introspective, a little more conscious of what we are trying to do and of the pitfalls that surround us. Professor Phelps Brown demonstrates to us the working process of an applied economist who is qualified and anxious to use the tools of the theorist and of the model-maker. But he remains—and I believe this is the essential characteristic of the applied economist—primarily concerned about truth, about the completeness of our understanding of a particular situation, rather than being primarily concerned about the perfection of a model.

AUSTIN ROBINSON

Sidney Sussex College,
Cambridge.

L'Homme Agent du Développement Économique. By A. TAYMANS. (Louvain: Institut de Recherches Économiques et Sociales de l'Université de Louvain, 1951. Pp. xv + 326.)

THIS book makes a very interesting study, on a rather unusual pattern, of the function of the entrepreneur as the agent of economic development. The author does not give us a systematic historical review of theories of what is sometimes called ("Gamesman"- and "Lifeman" -like) "entrepreneurship." Nor does he set out a new doctrine and terminology of his own. He presents his problem and builds up an analysis by the indirect method of discussing some four or five writers of leading importance who have analysed the subject of economic development and the role of the entrepreneur over the last hundred to a hundred and fifty years: Schumpeter, J. B. Say, Saint-Simon, and Marx and Engels.

Father Taymans's main central message is a philosophical one directed against mechanist, determinist, and scientistic explanations of the economic world. He takes Schumpeter's theory of economic development as his starting point because he considers it both the most coherent and the most "personalist" theory, or because "it has the double merit of providing a completely economic explanation and of giving the human personality the first place in its general account of economic life" (p. x). Father Taymans places Schumpeter's theory against its background of contemporary philosophy (for example, Bergson's Creative Evolution, in which there is drawn a general contrast between routine adaptation and creative response like Schumpeter's economic distinction between inert routine "circular-flow" activities and the creative innovations of the *élite* few). The creative response comes from the individual—in economic life just as much as in the sciences, the arts and religion. This is a fact which the organisation of society cannot alter. It can only give the activities of the creative individual full rein, or suppress, restrain, canalise or distort them. The opposite of Schumpeter's theory is, according to Taymans, the rigidly determinist Marxian explanation of economic development in terms not of individuals but of classes. It is very interesting that Father Taymans obtained Schumpeter's own approval for this philosophical interpretation or elaboration of his famous theory, and this makes one wonder what meaning is left in the accusations of "positivism" levelled against Schumpeter: Schumpeter's is certainly a very elastic form of "positivism."

Father Taymans puts Schumpeter's theory at the start of his book, and then goes back to his nineteenth-century predecessors J. B. Say, Saint-Simon, and Marx, and to the mixtures of illumination and error which they contributed. Say distinguished interest and profit, and saw the entrepreneur as the co-ordinator of industial workers and scientists, directing scientific and technical achievement into economic development. But Say's concept of the entrepreneur was too nearly static, and treated him too much as a passive intermediary serving the sovereign consumer—a concept which culminated logically in Walras's non-profit-making entrepreneur.

Father Taymans takes next Saint-Simon, that great "accoucheur d'idées" (as Comte called him), who perhaps surprisingly seems to have had a considerable respect for Say. Saint-Simon especially emphasised the innovating, and therefore risk-bearing, role of the entrepreneur, himself having given a highly successful practical demonstration of this function at one stage of his varied career. But by Saint-Simon the innovating individual is regarded simply as the mechanical interpreter of "the march of civilisation" and of its vast and vague impersonal forces—an approach which leads straight to over-simplified historicist laws of development. Marx's analysis, which Father Taymans discusses at length, carried still further the depersonalised determinism of Saint-Simon, by means of such abstractions as "capital," "the proletariat," etc. In fact, Father Taymans's main charge against Marx is just that abuse of abstraction ("abstraction inhumain"), or over-simplification, which is the original sin of both historicist and deductive sociologists and economists.

Father Taymans's book is in its own way an example of intellectual innovation or of the new combination of ideas. Students of the theory of economic development and of the four main authors discussed will find it very stimulating and interesting, especially in the wider aspects of this wide subject.

T. W. HUTCHISON

London School of Economics.

La Monnaie. By ROBERT MOSSÉ. (Paris: Librairie Marcel Rivière, 1950. Pp. 205. 450 frs.)

THIS is the first volume of a series which intends to present "*bilans de la connaissance économique.*" The project derives its inspiration from the American *Survey of Contemporary Econo-*

mics, whose editor—Professor Howard S. Ellis—introduces the French series. Like its North American relative, the present work (which covers the half-century to 1950) suffers from undue compression and inevitable omissions, though the separation of commentary (where the synthesis is attempted) and bibliography (which provides a brief analysis and criticism of major works) at least ensures that the main essay, which is Professor Mossé's own contribution, is less crowded than it would otherwise be. Sandwiched between these two sections are the "*observations*," in this instance provided by Luigi Federici and Robert Triffin. The former understands his function well, and usefully supplements Professor Mossé's argument. However, it is difficult to agree that the latter has very much to say that is more than remotely relevant to Professor Mossé's discourse. (For the most part, Dr. Triffin confines himself to a discussion of Latin American financial arrangements.) What this book does achieve *par excellence* is to provide a "Continental" view of the way in which economic knowledge has evolved in the monetary field over the past fifty years and the condition in which it finds itself at the end of the half-century.

The subject matter of the survey is difficult to define, since it is not restricted merely to Continental works, nor does it provide an exhaustive analysis of European contributions to monetary theory. The French, German and Italian literature is well represented. British and American writers have been generously treated (indeed, Professor Mossé might have been a little more discriminating in his choice). The Scandinavians are directly represented by Wicksell, Cassel and Myrdal. However, the bibliography should not be regarded as the only test and, in the text, one cannot help but feel that less than justice has been done to certain well-represented views, which have either been ignored or somewhat summarily dismissed. Two conclusions might be derived from a reading of Professor Mossé's opening essay: first, that he knows the earlier literature much better than the contributions of some of the more recent writers (the importance he attaches to the work of Knapp may surprise some readers); second (and here he represents a goodly number of his Continental colleagues), that he has little sympathy with Keynesian doctrines, which it may be are only imperfectly understood. Professor Federici also, in his observations, writes down considerably the value of Keynesian theory, which he obviously distrusts. Irving Fisher is still very much the hero of both these gentlemen.

One characteristic of the early part of Professor Mossé's treatment, which appealed rather strongly to the reviewer, was his linking of the development of theory with the underlying events. No one can deny the influence of environment on the theories which are current from time to time. Nevertheless, there is always the danger, when this approach is adopted, that the discussion will veer away from theory to become a consideration of policy, a pitfall which Professor Mossé has not wholly avoided. From this review of the background of events, he passes on to discuss the concept of money, a task which he tends to define rather narrowly. Somewhat cynically, he concludes that far from there having been an advance in the development of theory, there has probably been some retrogression (which presumably accounts for the emphasis on the older theorists). The main advances, he maintains, have been in the field of statistics, and he feels that future generations will probably characterise this period "*comme l'âge des chiffres plûtot que l'âge de la compréhension*" (p. 66).

In dealing with the mechanics of money, much stress is placed on the Quantity Theory, and Professor Mossé is perhaps rather too kind to the memory of Irving Fisher. Professor Aftalion's "income theory" shares the limelight. In the strictly monetary field, this is described (p. 79) as "*la grande innovation*" of the half-century. Even allowing for national pride, this would seem to be something of an over-statement. The work of Hawtrey and Keynes in emphasising the importance of an effective demand is fairly summarised (though one has the impression it is the Keynes of the *Treatise* he is interested in), but the theory of the multiplier does not appeal (p. 86). He agrees that monetary theory has become part of a more general economic theory, but that is not enough. "*L'étude de la monnaie devrait être reliée à l'étude de la société tout entière*" (p. 91). Our treatment of monetary matters, he feels, is still too mechanical. It is not sufficiently "*humaniste*," and it ignores important sociological and psychological aspects. These are the gaps which in his view must be filled by the rising generation. Finally, the author describes the creation of money and writes briefly both of the objectives of monetary policy and of institutional arrangements. The choice is stated as being between automatism and "*la direction humaine.*" It depends, he says, on one's confidence in governments.

J. S. G. Wilson

London School of Economics.

Activity Analysis of Production and Allocation. Edited by T. C. KOOPMANS. Cowles Commission Monograph No. 13. (New York : John Wiley (London : Chapman and Hall), 1951. Pp. xiv + 414. 36*s*.)

IN June 1949 a conference on " linear programming " was held in Chicago at the Cowles Commission for Research in Economics. This volume contains the principal papers read to that conference. The contributors include many of the major figures in the large and active group of econometricians in the United States—Samuelson, Arrow, Dantzig, Georgescu-Roegen, Gertenhaber, Koopmans, Kuhn, Morgenstern, Tucker, Marshall Wood and others.

So distinguished a company is bound to have our respectful attention; but it must be said straight away that they have produced between them a work of formidable difficulty. Except in a few marginal sectors, the country they have plotted is impassable to the non-mathematician, and even the mathematician may well feel that his weary plodding is seldom rewarded by the inspiration of a broad view. This is not, mathematically, an exciting book (as, for instance, the *Theory of Games* was exciting); and all the efforts of the editors cannot conceal the fact that a new and difficult subject is very ill presented by reproducing the proceedings of a conference. A speaker anxious to inform, perhaps even to impress, an audience already practised in his field of work can ascend the heights of his argument at a speed which leaves the untutored reader breathless far behind.

However " linear programming," now renamed " activity analysis," is a major new subject with important practical applications, and we may as well brace ourselves to the unpleasing task of learning what it is all about. If we think of a whole economic system as though it were a giant factory, then an " activity " is a single machine in that factory, which takes a given set of inputs (of raw material, labour time and so on) and turns out a set of outputs. The economic factory can be regarded as containing all the machines possible in a given state of knowledge—some being actually in current use, and some not; and the machines are (so to speak) elementary engineering units, carrying out a single step in the productive process.

For the purposes of the present study, an activity is assumed to be indefinitely divisible; half-sausages may be obtained by halving the inputs into the sausage-machine. Doubling the

inputs doubles the output, and more complex activities may be built up by adding together elementary units of activity : sausage-making plus sausage-wrapping produces wrapped sausages, to an amount determined by simple addition of the activities. The system thus embodies constant returns to scale, which is why it is called linear. The meaning and plausibility of this assumption receives all too little attention in the book, but it is in fact quite a reasonable one. It does not mean that production functions must necessarily be linear. It will break down where there are indivisibilities, but it is not disproved by the fact of changes of technique when output grows—these are movements from one activity to another, both pre-existing in the universe of possible activities. One's instinctive feeling that the assumption of " constant technical coefficients " in a Leontief table is unrealistic comes largely from the great amount of aggregation in that model; but here we are thinking of elementary bits of activity, for which constant coefficients will often be an engineering fact.

An activity can be represented by a set of numbers representing its inputs and outputs—negative for inputs, positive for outputs; and it can thus be represented by a point in a space of dimensions equal to the number of things which are factors of production, outputs or both. Furthermore, all the points on the *half-line* joining the origin to an activity-point and passing on to infinity represent different scales of the same activity—$(\frac{1}{2}a, \frac{1}{2}b)$ is on that line if (a, b) is. It is a *half*-line because activities are not reversible; one cannot have an input of ECONOMIC JOURNALS with an output of editorial man-hours, paper, ink, etc.

Now some activities can be built up as a linear combination of others. The half-lines come out from the origin in a cone, like the twigs of an n-dimensional besom; they do not go off in all directions, because inputs must be negative and outputs positive. But the interior twigs of the besom can certainly be obtained as linear combinations of those outside; in fact, the whole cone can be built up on a frame of basic activities, like the ribs of an umbrella. Just as an umbrella becomes floppy if a rib is broken, so the omission of an activity from the frame makes the cone " shrink."

In an actual production system the cone is intersected by various surfaces, representing the limitations of the system. Inputs will be available only up to a certain amount; we may wish to take certain outputs as given, or others as not falling below a certain level (*e.g.*, a minimum tolerable food level, or a

minimum output of tanks in war-time). We want to choose a set of activity-points which is "best" within the limitations imposed. The argument can proceed roughly as follows. First, with a given universe of activities and given limitations we find the set of all attainable net outputs of commodities. Secondly, we eliminate the "possible" net outputs which are obviously inferior, being better than some other possibility for no commodity and inferior for some. The possibilities left over after this weeding-out process are called "efficient," thus giving this overworked word yet another meaning. The efficient possibilities will usually be very numerous, and further choices will have to be made between them—a subject on which the book is for the most part silent. The object of inquiry is to determine an efficient pattern of production; but, having called an intermediate stage "efficient," the tired wanderer may be tempted to go no farther.

At this point the mathematical idiot may like to look at Chapter XIV, which relates to getting an optimum system of ship movements. On p. 230 he will see a simple cone defined by four activities, with two facets giving the efficient possibilities, so called. On p. 238 he will see how, if the total amount of shipping is restricted, the efficient points lie on two lines. But the non-idiot will do well to read the book in an order different from the somewhat odd order of its presentation. Chapters XVII and XVIII, on the theory of convex polyhedral cones, should come first; fortified by these, Chapter III ("Analysis of Production as an Efficient Combination of Activities") becomes intelligible; then one can look at some applications—Chapter XI on the choice of crop rotations, Chapter XII on planning the Berlin airlift and Chapter XIV on ship movements. Then one can return to some of the theoretical by-play of Chapters IV–X, which relate the work to that of Leontief and follow up some interesting mathematical side-roads. The remaining chapters are a miscellaneous lot, the last five being concerned with the problems of computation. But Chapter II is worth a final look; it is on linear programming of the pre-cone era, and is consequently somewhat easier to understand.

The problem which this book tackles is undoubtedly worth attention; but it does not seem to me certain that its present formulation is necessarily the best. To think of a problem in a geometrical, rather than an algebraic, way often gives flashes of insight; things which were tiresome to prove or even to perceive suddenly become obvious. Such successes do not

appear to occur in the present book, but the authors have earned our thanks for the powerful and erudite work which they have done.

C. F. CARTER

The Queen's University,
Belfast.

A Reconstruction of Economics. By KENNETH E. BOULDING. (New York: John Wiley (London: Chapman and Hall), 1950. Pp. xiii + 311. $4.50.)

PROFESSOR BOULDING'S latest book is stimulating chiefly in so far as it illustrates the many simple traps into which even the most practised theorists can fall if they attempt to reconstruct too much with too little care. If there is a consistent theme in a book which deals with topics ranging from "Reality as an Ecosystem" to "Economic Cybernetics," and concludes with some extraordinarily jejune remarks on "The Future of Capitalism," it is that a good deal of economic theory can profitably be re-written in terms of *stocks* rather than *flows*. This idea is interesting enough, and might well provide some useful insights, were it skilfully handled. Unfortunately Professor Boulding does little more than dress up a number of balance-sheet indentities with an unnecessary amount of immature sociology, surround them with some well-worn fallacies generally associated with the Quantity Theory of Money, and hail the result as a contribution to modern economics.

It is to be repeated, however, that the book is stimulating. The description of consumers' preferences in terms of "preferred asset ratios," the emphasis placed on the fact that tastes should normally be thought of as dependent upon prices (and price expectations), and the eventual elucidation of a liquidity-preference theory of market price, are all worthy of high praise. The latter is particularly valuable in that it shows why we should ordinarily expect an increase in the quantity of money to raise *all* prices, and not merely the prices of securities. Cheap-money enthusiasts would do well to ponder this conclusion.

Professor Boulding's macro-economic theories of distribution and public finance illustrate very clearly what I have referred to as the fallacies generally associated with the Quantity Theory of Money. Various accounting identities of the $MV = PT$ type are produced. A symbol standing for the share of wages in the national dividend appears on the left-hand side. Another standing for consumer credit appears on the right-hand side with a

negative sign. Ergo, argues the Reconstructing Economist, an increase in instalment credit (hire-purchase buying) causes a shift from wages to profits. The tremendous burden placed on the *ceteris paribus* assumption in this argument is too obvious to require emphasis. Reasoning of an essentially similar kind leads to the conclusion that an increase in taxation will increase output and employment—provided the budget surplus is kept constant (so that government expenditure rises *pari passu* with taxation)!

There are a number of small technical errors in the book—of which the bland assertion (p. 182) that the construction of social indifference curves requires cardinally measurable utility, can serve as an example. These should be removed if the book is reprinted. In addition, Professor Boulding is to be strongly urged to drop his idiosyncratic definition of "consumption." He uses the term synonymously with the destruction and depreciation of capital assets, and then discovers (not altogether without glee) that the "minimization of consumption" is one of the principal aims of all economic activity. His colleagues, who are accustomed to speaking of the consumption of the *services* of capital assets, and to thinking of the maximization of this consumption as desirable, are unlikely to take kindly to a terminological somersault introduced largely in order to give the specious appearance of paradox.

J. DE V. GRAAFF

St. John's College,
Cambridge.

The Theory of Inter-sectoral Money Flows and Income Formation. By JOHN S. CHIPMAN. (Baltimore: Johns Hopkins Press, 1951. Pp. 154. $2.)

THIS book is about the matrix multiplier. The economy is supposed to consist of n sectors, the disbursements to every sector by any sector being a linear function of that sector's receipts of the previous period.

The first part of the book introduces certain ingenious devices by which some features of reality can be allowed for without upsetting the simple basis of the model. Two such devices may be mentioned here. The first is that of the "goblin" or "collecting agency" to allow for the fact that all disbursement lags are not of the same length. Thus if A's disbursement to B lags one period behind A's receipts while its disbursements to C have a two-period lag, Dr. Chipman places a "goblin" between sectors A and C so that A makes disbursements to the goblin with

a one-period lag and the goblin passes the whole of the amount on to C after the lapse of another period. The second device which may be mentioned here is designed to deal with receipts which, being on capital account, are not income-generating; these are treated as negative disbursements, and all payments by Finance (the sector which deals in evidences of debt) are treated as negative receipts of Finance. This procedure produces complications; for example, ploughed-back business profits are dealt with by a series of notional payments as follows: a positive disbursement from Business to "the artificially defined group of earners of retained profits," a positive disbursement by them to Finance and a negative receipt by Finance to Business, this latter being a negative disbursement of Business. Thus Dr. Chipman's desire to include all money flows leads him to invent some non-existent ones. Since he is not interested in the capital market, but only in the markets for factors and goods, the point of the whole proceedings is not evident. It would have been simpler to consider only those payments which are a direct part of the circular flow of income generation.

Part Two of the book analyses a two-sector multiplier, both geometrically and algebraically, while Part Three formulates the multi-sector multiplier and analyses its properties with the aid of matrix algebra. This part is, as the author says, the core of the work. The correspondence principle, stability conditions and the conditions for oscillation are discussed, and it is proved that "If all sectors' marginal propensities to spend are equal to one another, the multi-sector multiplier reduces to the simple aggregative multiplier formula." Dr. Chipman has thus written an ingenious book which should be read by all economists who enjoy matrix algebra.

RALPH TURVEY

London School of Economics.

The French Franc between the Wars, 1919–1939. By MARTIN WOLFE. (New York: Columbia University Press (London, Geoffrey Cumberlege), 1951. Pp. 229. 21*s.*)

THIS is a modest and stimulating sketch of French monetary policy during the twenty-year crisis. After an account of the main financial institutions, which might with advantage have been further elaborated, the author deals in turn with the four phases which together exhaust his period. First comes the four-sou franc. The forty pages devoted to it invite comparison with Eleanor Dulles's much longer study, *The French Franc, 1914–1928.*

The present treatment comes out well. Dr. Wolfe is less inclined to excuse the deficiencies of policy by alleging political determinism, less concerned with or antagonistic to the quantity theory of money and, with the hindsight that Miss Dulles lacked, more cautious in his appraisal of the 1928 stabilisation. On the debit side there is more in the present work to take on trust or on incomplete demonstration. This latter might, indeed, be said of the work as a whole, for it covers twenty hectic years in something less than 200 pages of text. Although in his Preface the author remarks: "The franc has run virtually the whole range of monetary experiences in recent years and provides a rich source for specialists in monetary theory. But first the facts must be known. The object of this book is to help with the work of marshalling these facts into a coherent pattern and thus to explore one of the important strands of French economic history between the wars," yet on occasion statistics appear to be cited more for the record than because the author feels they contribute much to his analysis, while some of his conclusions emerge from more extensive knowledge than is reported in the text. If general fault there be, it is the rare one of over-restraint which could easily be repaired in a second issue of the book.

From the twin illusions of reparations and the return to the pre-1914 parity—illusions which paralysed policy up to 1928—the book passes to the gold franc. Here the fanatical belief in budgetary equilibrium and the inconsistencies of policy are well exposed. In accounting for the relative lateness with which the depression touched France it is perhaps surprising that the building programme is not mentioned, while in the depression years M. Rist and others were somewhat more critical of sterling policy than is suggested here. In his estimate of the Popular Front experiments Dr. Wolfe makes the point that although the forty-hour week was accepted "in principle" about the time when wages were raised, the reduction of the length of the working week did not come into operation until after the industrial slump of the summer of 1936. Uncertainty and hostility were such that the intervention of the new Exchange Stabilisation Fund after September, 1936, with an obligation to maintain the gold value of the franc between 49 and 43 milligrams, encouraged capital transfers. If the Fund had not functioned, the depreciation of the franc would have been heavier but the export of funds might well have been less. The money-market position did not improve until Daladier took over, accomplished a depreciation and tied the franc to sterling.

The improvement in the Paris money market was not reflected in business conditions, where depression continued until just before the outbreak of war in 1939. To the last, monetary policy had refused to acknowledge the economic problem. In 1950 it was thought—and rightly so—a triumph merely to have returned to the levels of production of the previous peak in 1929. Between 1912 and 1950 French production had increased by less than a half; in the 1930s there was no net investment whatever. Little of this can be fully understood without bringing in the lack of social cohesion that has its roots in the nineteenth century. But, proximately, the harbouring of illusions and the striving for false goals accepted, the fundamental trouble on the monetary side was that the Paris money market lacked discipline. In a country which is divided against itself and has no central authority with sufficient power to compensate for the lack of willing co-operation, even the most enlightened and consistent policy is likely to fail. We must be grateful to Dr. Wolfe for his study of unrelieved failure.

D. J. MORGAN

London School of Economics.

Facts from Figures. By M. J. MORONEY. (London: Penguin Books, 1951. Pp. viii + 472. 5*s*.)

Introduction to Statistical Method. By B. C. BROOKES and W. F. L. DICK. (London: Heinemann, 1951. Pp. vii + 288. 21*s*.)

A WELCOME should be given, at any rate in principle, to an attempt to provide the public with a simple introduction to the many useful everyday applications of statistics. But if Mr. Moroney's motives and his desire to deal with a broad sweep of topics are to be applauded, it still remains very doubtful whether his execution of the work satisfactorily fills the existing need. Unfortunately he has tried to do too much.

His *Facts from Figures* provides ample evidence of having been thrown together in considerable haste. On occasion Mr. Moroney explains the theoretical background of a statistical application with painstaking clarity, but a few pages later all the good is more than undone by beating the reader about the head with an array of formulæ conjured from the air. Somewhat more than half-way through the text, the conception of cartesian co-ordinates is carefully explained with a wealth of detail. This explanation loses much of its value to the uninitiated reader,

since the knowledge, so thoughtfully provided at this late stage, has already been implicitly assumed for upwards of 300 pages.

In a book that aspires to popularise statistics, little is achieved by introducing the multinomial distribution in order to lead on to the binomial distribution as a special case. The importance and the rôle of the normal and Poisson distributions can be fairly readily appreciated if the way in which they are derived from the binomial distribution is simply indicated. Mr. Moroney, however, chooses to confront his patrons with both these distributions without adequate warning or preparation, and their relationship to what has gone before is only mentioned in an aside.

The author appears almost over-anxious to sell statistics to the public. Not everyone with some interest in the same trade will agree to force the same line as he does. He is particularly keen to plug the statistics of the factory floor, and only occasionally does he pause to collect enough breath to shout a rude word at civil servants and at economic statisticians. Both classes of sinners are no doubt sufficiently conscientious to be grateful for constructive and informed criticism. Unfortunately it becomes increasingly obvious that, however well the author may know his quality control, economic statistics remain to him a virtually uncharted sea.

Mr. Moroney gives little inkling that he understands the problems for which economic statistics humbly tries to provide answers. He appears content to state that since the present solutions are inadequate, the problems themselves do not merit further attention. This peculiar attitude leads him to make comments about index numbers that can only be dismissed as silly. His strictures on the use of time series would be more firmly based if his description of existing methods were not entirely confined to the purely conventional isolation of trends and seasonal movements.

If Mr. Moroney's lack of deep knowledge in certain directions leads him into trouble, so too does his desire to cover more or less everything in his favourite field. Neither his outline of sequential analysis nor his extensive examples of the analyses of variance and covariance are really likely to mean over much to the enthusiastic beginners for whom his book is intended.

Despite these sharp criticisms, it remains true that many people will derive considerable benefit from reading *Facts from Figures*. If only more people are set on the road to acquire a healthy attitude to figures, a most useful service will have been performed by Mr. Moroney.

The authors of *Introduction to Statistical Method* are considerably less ambitious in their aims and more successful in hitting their target. This book is a very carefully produced elementary text-book intended both for those at school and for non-specialist undergraduates reading any subject where statistics have an application. It is not designed for the layman desirous of finding out what statistics can do, but it is intended rather for the serious student of limited mathematical attainments; that is, for one who is convinced of the utility of statistical knowledge and is prepared to acquire the necessary expertise by sheer hard work at the elementary drills. The authors appear to have done a most admirable job in providing for this class of student.

Part I (the two parts are separately available) deals with frequency distributions and elementary probability. The standard Binomial, Poisson and Normal distributions are here clearly explained. Part II outlines tests of significance, simple regression and correlation, tests of goodness of fit applied to contingency tables, and problems of elementary experimental design. Within the limited scope that they have given themselves, Messrs. Brookes and Dick do their best to impart a feeling for statistics, and in this task their explanation is well supported by an extensive and carefully compiled set of examples with each chapter. Possibly there is a slight tendency for them to suggest that tests of significance based upon the assumption of normality can be applied much more generally without anxiety.

Introduction to Statistical Method cannot be described as a very stimulating book, but it should prove to be exceedingly useful. Those undergraduates and others who work conscientiously through its pages will acquire a sound foundation on which a more imposing structure can be safely built, if need be.

A. D. Roy

Sidney Sussex College,
Cambridge.

Central and Local Government: Financial and Administrative Relations. By D. N. Chester (London: Macmillan, 1951. Pp. x + 421. 30*s*.)

The first thing to note about this book is its sub-title. It was not the intention of the author to produce a comprehensive work on the principles and practices of government and still less to write a major work on government finance. He is concerned with one of the border-line topics between these two subjects: the division of responsibilities which exists or ought to

exist between the two main layers of government in this country and the role of Central Government grants in this relationship. And even within this strictly limited sphere of interest the author has deliberately chosen not to try to write a historical tract but rather to search for fundamental principles and illuminate them by reference to case-histories. It is therefore very definitely a book for the expert and specialist rather than the general reader.

Working within these carefully chosen limits, Mr. Chester has written a book which will stand for many years as the authoritative treatment of the subject. He starts in an admirable way by outlining his own prejudices, which quite clearly amount to a firm belief in the general efficiency as well as the democratic virtues of local Government. (Any assiduous Whitehall-lover would do well to read the magnificent account, on pp. 24–8, of the delays involved in seemingly endless argument and correspondence between a large County Borough and a Government Department on the proposal to erect a hutted day nursery.) The next step is to review the powers, other than those involved in the grant system, which the Departments of State possess over local authorities. The general conclusion is (p. 121) " the powers of the Department are in practice likely to be more fruitful in curtailing an above-average level of local activity than in stimulating individual Authorities to achieve such a level." The author argues therefore that a grant system is essentially an initiatory device stimulating and encouraging local authorities to develop in various directions. The remainder of the book is devoted to an exhaustive analysis of the various types of grants in operation in England and Wales over the last century or so. The technique used is to illustrate various principles of grant-fixing (*e.g.*, grants for specific services as against general grants to be used in aid of any expenditure, grants made on a uniform basis to all authorities as against those discriminating in favour of the poorer ones) by copious references to actual grants rather than to give any chronological account of the development of this form of local finance. This method does have inherent disadvantages. Although it may not matter very much to most readers that references to some minor nineteenth-century grant are scattered through the text, it is a little tiresome that in order to find the author's appraisal of the 1948 Exchequer Equalisation Grant one has to search through about twenty different references. Even the comprehensive and extremely useful Appendix listing the provisions of the grants in existence to-day hardly compensates. But essentially this is a minor inconvenience, and everyone

interested in this field owes a debt of gratitude to Mr. Chester for his erudite guidance through the voluminous Acts and Reports dealing with this subject.

A possible criticism is to ask whether the author might have improved his treatment and given his argument deeper content by raising the shutters and letting in the light of economic analysis a little more frequently. Is it really possible, for instance, to discuss the whole question of grants designed to give disproportionate help to poorer authorities without asking whether this ties in with the economic policy pursued by other departments on the distribution of industry? How well do the equalising provisions of the 1948 Act link up with the post-war policy of bribing and cajoling industrialists to open their new plants in South Wales and Tyneside rather than on the Great West Road? And in his final chapter the author concludes (p. 333) that "the most important improvement required is a substantial increase in the independent sources of revenue of local authorities." Might this not make both the absolute difference and the ratio between the grants required by two local authorities with similar needs but varying resources even greater than at present in so far as relative yields of, say, local income taxes will tend to be similar to those of local rates? This is another subject on which we could have done with Mr. Chester's guidance.

But it is very often a sign of a very good book when a reviewer is forced to look for subjects omitted rather than confine himself to the material actually presented by the author. And this is no exception.

A. R. PREST

Christ's College,
Cambridge.

Productivity and Trade Unions. By F. ZWEIG. (Oxford: Basil Blackwell, 1951. Pp. 240. 21*s.*)

THE method of investigation which Dr. Zweig employs in this book, and in other of his works, consists in eliciting information by means of personal interview and contact with a wide variety of persons concerned at various levels with the activity he seeks to investigate. The method has certain advantages, particularly in the hands of one like the author, whose evident sincerity and impartiality appear to inspire the confidence of those with whom he talks. Attitudes and opinions come to light which in the more formal atmosphere of industrial negotiation or official

investigation are rarely disclosed but which undoubtedly motivate action.

Dr. Zweig tells us, however, that his main concern was to unearth new facts by means of interviews and personal observation; that he was concerned with ascertaining the true facts rather than conducting opinion research. The validity of facts established by such methods and of any conclusions the investigator may draw from them will depend in a very high degree on his ability to judge men, their good faith, their goodwill and their reliability. Dr. Zweig tells us that:

> "One good observer, experienced and knowledgeable, who is willing to help you and is not afraid to speak his mind freely, is a much more valuable source of information than ten timid or self-centred subjects who know little and have small powers or range of observation."

That is all very true, but we must still rely on the ability of the investigator to choose for interview such a good observer. In point of fact, much of the factual material with which Dr. Zweig supplies us in this book seems to have been derived, or at least checked, from documentary sources. Moreover, where matters of opinion are concerned, he places before us the varying points of view which emerged from his interviews as well as the conclusions he draws from them.

The first part of this book consists of five chapters in which the author examines such questions as the nature of restrictive practices, the forces affecting trade union behaviour and the impact of full employment on productivity. The main theme of this section—and indeed the main conclusion he draws from his investigation—is the necessity for a "situational approach" when considering factors affecting productivity. Every factor affecting industrial relations is a factor affecting productivity; it is useless to attempt to remedy a situation by attending to a single factor; the situation must be examined as a whole.

The remainder of the book consists of studies of five industries—building and civil engineering, cotton, iron and steel, printing and engineering. The "situational approach" results in these studies being largely descriptive of the industries themselves, of their labour conditions and of their methods of industrial relations. In the going a great deal emerges both as to comparative standards of productivity pre-war and post-war and as to the material conditions and workers' attitudes which account for the differences. We learn less, however, than the title of the book would lead us to expect of the influence which trade unions,

through their structure, policy and methods, have upon productivity. One would have wished, for example, to have heard something of the educational activities of trade unions, what they are doing to educate their officers and their members towards a new approach to problems of industrial efficiency and productivity. Many trade unions are devoting increasing attention to such matters, and their interest appears to have been stimulated by what they have recently learned of the activities of American trade unions in this field.

In the absence of such a new approach, the method of joint consultation through productivity committees and such bodies seems likely to deny its war-time promise of a new atmosphere of co-operation at the works level. Dr. Zweig brings out well the point of the unfortunate effects of apathy among trade-union members. In no respect is this more apparent, however, than in relation to joint consultation on productivity questions. What might have been an exciting adventure has too often developed into a dreary routine. In some cases too apathy has resulted in workers' representation on such bodies getting into the hands of unofficial elements opposed to official trade-union policy, and so in turn to trade-union opposition to the whole method of joint consultation at the works level.

If this book, however, tells us less than we had hoped about the effects of trade-union activities upon productivity, it tells us more than might be expected of the less-tangible influences of works atmosphere. It contains rather too many misprints, and the chatty informality of the style is at times irritating. Nevertheless, it is on the whole an informative, stimulating and readable book.

H. S. KIRKALDY

Queens' College,
Cambridge.

Education for Management. Productivity Report. (London: Anglo-American Council on Productivity, U.K. Section, 1951. Pp. xii + 86. 4*s.* 6*d.*)

AT the suggestion of the British Institute of Management, a Team was sent by the Anglo-American Council on Productivity to the United States in the Spring of 1951 with the following term of reference:

> "To secure some measure of the volume of effort devoted to formal education in management subjects in the United States at all levels;

> "To visit selected educational establishments providing formal schemes of education and training for management and to study their methods;
>
> "To attempt to assess the acceptability of such formal education in management subjects to industry and commerce and its influence on the subsequent careers of students."

The visit lasted forty days. Its report is twenty pages long, with sixty-four pages devoted to factual appendices. The first paragraph of the Team's findings reads:

> "Practically every Productivity Team which has visited the U.S. is agreed that productivity per man-year is higher than in Britain. They attribute this mainly to two factors. First, there is a climate of opinion which regards maximum effort by every individual as the primary guarantee not only of material standards but of the way of life of a free society. Second, there is a quality in management, inspired by this climate of opinion, and stimulated by the American system of higher education in general and, in particular, by that part of it which is devoted to administrative studies. American business employs graduates because it believes that higher education helps business."

The text of the report is as vigorous and enthusiastic as its principal findings and there are already—a few months after publication—very clear indications that it has kindled a lively and vigorous interest in industrial and other responsible quarters. This, rather than the detail it contains, may constitute its permanent importance.

It is, therefore, scarcely profitable to submit it to detailed scrutiny. The university teacher, who needs to go further into such matters as comparative academic standards than was either necessary or desirable for the Team to do, will find some of the guidance that he needs in the report of the parallel Team "Universities and Industry" and in Dr. P. F. R. Venables' careful study of the American university scene in Vol. VIII No. 31 of *The Advancement of Science* (pp. 310–18). The advanced research worker will find in Professor Ronald S. Edwards' inaugural lecture (*Economica*, November 1951, particularly p. 393) some discussion of the limitations of the practical feet-on-the-ground methods of some American business schools. These, as he points out, can be carried to a stage "which inhibit fundamental enquiry." In the *19th Annual Report 1950–1951 of the Cowles Commission for Research in Economics*, pp. 7–23, is an account of a new approach to fundamental enquiry in these fields, squarely based on the disciplines of the social sciences

and less exposed to the dangers with which Professor Edwards was concerned.

Generally, as Professor Edwards argues, there is a need for caution in copying institutions " which may themselves be in process of change " (*op. cit.*, p. 393). The Team itself would appear to share this attitude. In their preliminary conclusions they speak of the intellectual modesty with which the architects of the American experiments regard their own handiwork (p. 2). At a crucial stage in their report, where they deal with the major objectives of all the schools visited—devising a balanced programme of liberal arts and professional studies—they quote (p. 10) not the syllabus of an existing institution but the hopes and aspirations for the future set out by Professor George W. Robbins in his " A Pattern for Professional Business Education " in *The Accounting Review*, Vol. XXIV, No. 4, October 1949.

In its later sections, the report turns away from higher educational institutions to contemporary managerial practices in some sections of American industry. It describes the close liaison between business and education, and has a brief section devoted to executive development. This deals with contemporary American practices of which too little is known in this country. The two paragraphs on p. 17 headed " personnel inventory control " and " methods of training " will repay careful study and appropriate application. The twenty most widely used methods of training executives are listed. They include only one reference to " attendance at advanced management courses at Harvard and elsewhere." This, perhaps, puts such courses into their proper perspective. Undergraduate courses in administrative studies and immediate post-graduate courses of the Harvard M.B.A. type are, of course, excluded from the list as providing mainly " pre " and not " post " entry training.

The Team's terms of reference were restricted to formal education. The report goes beyond the limits set. Its emphasis throughout is on the importance of the integration of theory and practice.

> " The making of future leaders is a process begun by the individual's home and formal education and continued by his business environment. . . . Whatever provision is made for the education of the recruit before he enters business the larger part of his training for executive responsibility takes place within business itself " (p. 16).

It is with this continuous process and not exclusively with specialised studies at the university stage that the Team's report

becomes increasingly concerned. This process in the United States is helped by the climate, surprising and challenging to British visitors, that exists between business and education. The Team notes the widespread belief in higher education amongst industrialists in the United States, the confidence held by many employers in the work done in the business schools and their readiness to absorb their graduates. It emphasises the importance of interchange of staff between the business schools and the universities, business accepting many faculty members as consultants and the universities accepting experienced business men as *professores adjuncti*.

The report will have achieved its purpose if it helps to create a new and lively interest in these matters, both amongst university teachers and industrial managers. A great deal of evidence is already accumulating which suggests that its vigour and enthusiasm is infectious and that it is succeeding at a particularly opportune moment in arousing interest in matters that may hitherto have been underrated in the United Kingdom.

N. F. HALL

The Administrative Staff College,
Henley-on-Thames.

Coastwise Shipping and the Small Ports. By P. FORD and J. A. BOUND. (Oxford: Basil Blackwell, 1951. Pp. 52. 10*s.* 6*d.*)

IN this slim volume Professor Ford and Mr. Bound have succeeded in presenting for the first time a detailed account of the coastwise shipping traffic of the United Kingdom and an estimate, or perhaps more accurately, an indication of the part played by the small ports in the transport system of the country. It may seem surprising in a nation in which the coasting trade has for centuries been regarded as a nursery for seamen and a stimulus to shipbuilding and where the history of commerce has for long been recognised as a part of social and political history, that the nature and extent of this trade should have remained obscure until now. The principal reason has been the lack of adequate statistical information. The enlightened policy of the Ministry of Transport and of certain port authorities in giving, with proper safeguards, access to the detailed records of the working of the ports has enabled this obstacle to be surmounted. The cost in statistical labour has, however, been heavy, and may be appreciated when it is realised that the whole work has been based on the classification into fifteen different commodity groups of " the details of every arrival and sailing and of each shipment of cargo " at each

of 282 ports for the year 1948 and, in the case of seven selected ports, for a number of pre-war years, usually 1936–38.

On the basis of this data the study examines the coasting trade as a whole and the various types of traffic of which it is composed. In this section the total volume of cargo carried in the coastwise trade by tramps (of over 100 gross registered tons) is estimated at approximately 29½ million tons in 1948, and the flow of this large volume of traffic is analysed into twenty-three main traffic routes. The dominating position of the coal trade, especially between the Tyne and the Thames, is apparent. Coal constitutes fully 80% of the total cargo tonnage, the remainder being made up of a small range of other bulky commodities of comparatively low value, the most important of which are building materials, fertilisers, and food and feeding-stuffs. An estimate is also made of the amount of haulage work done by coastal shipping in terms of "ton-miles." The calculation suggests that when the length of haul is taken into account the coastwise traffic is equal to about one-third of the total freight traffic of the railway system. It thus corrects the impression that coastal traffic is trivial compared with that carried by rail. If further evidence was required, war-time experience of the difficulties attending the weekly despatch of some 150 "convoy" trains of fifty wagons of 12 tons capacity from Northumberland and Durham to carry, to London and the south, coal diverted from coastwise shipping would provide it. It should be noted that the figure given on p. 24 of the tonnage of goods carried by rail is for 1946 and not for 1948 and that it *includes* coal and also coke and patent fuels. Further, it excludes "free-hauled" traffic, which probably amounts to about 20 million tons a year or two-thirds of the total volume of coastwise traffic.

The functions of the smaller ports are next considered. Although this section contains much useful material relating to the trade of the individual ports and groups of ports and the balance of inward and outward traffic between them, this is the least satisfactory part of the work. The difficulty seems to arise from the use of terms "small," "smaller" and "smallest" to describe various groups of ports. In consequence it is not easy to follow either the analysis of the data or the discussion based upon it.

The study of the coastwise traffic in 1948 is supplemented in a final section by an account of the pre-war work of seven selected ports. In the case of these ports "foreign as well as coastwise, liner as well as tramp" traffic is examined and the nature of the service which they render to their respective regions is brought out.

Professor Ford and Mr. Bound are well aware that their study of coastwise shipping is by no means exhaustive. They indicate plainly that it is concerned mainly with the cargo traffic of tramp steamers and excludes the coastal work of liners and tankers. Further, they recognise that, in their own words "The economy of the fleet—its cost, charges and earnings; the dues and charges at ports; the relative costs of diverting traffic—and other matters, have not been touched upon." Nevertheless, the more limited aim of the authors to sort out some of the chief facts concerning the coastwise shipping trade has been achieved. Moreover, despite "the arduous labours of mass statistical work" the authors have retained imaginative insight into the work of the tramps as they make their way from port to port, weaving an intricate but coherent part of the pattern of the transport system of the British Isles.

It is to be hoped that the Ministry of Transport and the harbour authorities may be stimulated by the results of this investigation to arrange for the continuous collection and tabulation of quantitative data about the work of the ports.

E. D. McCallum

King's College,
Newcastle upon Tyne.

Industry and Planning in Stepney. A Report presented to the Stepney Reconstruction Group. By D. L. Munby. (London: Oxford University Press. 1951. Pp. xiv + 466. 30*s.*)

Stepney, the East London borough lying between the City and Poplar along the River Thames from the Tower to Limehouse, was heavily damaged by war-time bombing and lost a large part of its grossly overcrowded population during the war. The main part of its area, together with the adjoining area in Poplar, were scheduled for planned reconstruction, involving a considerable permanent fall in population and some removal of industry as well as of people to new centres outside London. Stepney was included within the scope of Sir Patrick Abercrombie's London Plan and of later, more detailed planning proposals by the L.C.C.; and, side by side with these official projects, the Stepney Reconstruction Group, with its centre at Toynbee Hall, set out to make a detailed study of the borough and its problems, with Mr. D. L. Munby in general charge. This volume, written by Mr. Munby for the Group, is the outcome of this survey. Mainly prepared by 1946, it has been revised and brought up to date in the light of more recent developments; but its approach is that of the

immediately post-war planners rather than that of the more disillusioned planners of to-day.

Stepney, historically regarded, is not a unity but a fusion of a number of villages—Wapping, Shadwell, Ratcliffe and Limehouse along the river, and Spitalfields, Whitechapel, Mile End, Old Stepney and Bow Common farther north. Its main occupations to-day are clothing, dock and warehouse work along the river, and commerce in the districts nearest the City; but there are also many miscellaneous industrial establishments—breweries, gasworks, cigarette factories, food-processing establishments, small metalworking shops, furniture workshops and many more. There are some modern industrial and commercial buildings, but a high proportion, even of those which have survived the *blitz*, are old and obsolete. So is much of the housing, built mostly during the nineteenth century as the spaces between the old settlements were gradually filled up. A good deal of the worst housing was destroyed by the *blitz*, but many sunless overcrowded courts and mean streets remain, and among the dwellings are scattered a host of back-yard workshops; while many houses still serve the double purpose of dwelling and domestic workshop.

It is undeniable that the area needs drastic re-planning as well as re-building, or that it must be re-built at a greatly reduced density of employment as well as of population. Mr. Munby holds that the L.C.C.'s plans do not go nearly far enough in either respect. The London Plan reluctantly adopted a density of population admitted to go beyond what was desirable; and it also stressed the difficulty of getting industry and commerce to move. Mr. Munby argues that the proportions of population and industry that are tied to the docks are both relatively small; that it would be easy to induce a large part of the clothing and other consumers' industries to migrate if proper arrangements were made for them elsewhere; and that more land could be made available for housing if the spill-over of commerce from the City into the western part of the borough were checked.

The book is valuable not only as a study of contemporary problems, but also for the great amount of historical material about the growth of Stepney and the changing patterns of its population and economic structure. The large influx of foreign population, mainly into the clothing trades, is, of course, the outstanding feature of the Whitechapel district. In 1930 Stepney contained over half the Jews in East London, and about 45% of the entire population of the borough was Jewish. This great immigration, principally from Poland and Russia, reached its

height in the 1880s; after 1900 the influx was more than offset by movements of population out of the borough, but the efflux failed to relieve overcrowding as it might have done, because of the increasing loss of houses to industrial and commercial developments.

Space is lacking to do more than illustrate by these small examples the wealth of factual material Mr. Munby has brought together in this admirable historical, demographic and economic survey. His conclusions about the future are necessarily controversial; for Stepney cannot be planned apart from London as a whole, and there are too many uncertain assumptions. But within the limits set by these uncertainties Mr. Munby has done his job well, and deserves congratulations on a very thorough and well-written study.

G. D. H. Cole

All Souls College,
Oxford.

Industries in Welsh Country Towns. By A. Beacham. (London: Oxford University Press, 1951. Pp. vi + 91. 6*s*.)

Industry in the Country Towns of Norfolk and Suffolk. By T. Eastwood. (London: Oxford University Press, 1951. Pp. 63. 6*s*.)

In 1946 the Development Commission set on foot three studies of industry in country towns. Two, completed in 1947, are now published, after long digestion in Whitehall. The third, on the South-West, is to come.

In many matters this first pair speak with one voice. Industrialisation has proved of great economic and social value to the countryside. Rural labour has proved very satisfactory in industry, though lack of technical training facilities, and of choice of jobs and a large local pool of labour, has proved a nuisance to employers and workers alike. In many areas there is a lack of balance between jobs for men and women, which leads to emigration of both sexes, and a still smaller labour pool. Transport difficulties, thanks to the lorry, have not proved serious, even, surprisingly, in Central Wales; though in neither area is there much good to be said of the railways. Water supplies have not proved a serious barrier to development. Sewerage is more of a problem, and electricity is expensive enough in both areas to be a nuisance, though again not a major one.

The prospects for firms based on local materials and markets seem poor in Central Wales. They are better in East Anglia, but

Mr. Eastwood comments that the industries serving agriculture are now often becoming too specialised to be sited in small towns. In both areas the trouble is that the locally based are also largely the older firms, and old localised businesses seem seriously lacking in drive, managerial ability and perhaps capital. Firms driven into the rural areas during the war, on the other hand, have on the whole good prospects. The prospects of both local and alien firms depend—Professor Beacham stresses this heavily, while Mr. Eastwood mentions it in passing—on the efforts of local communities. The underlying implication in both surveys seems to be that local efforts can do more to spy out the nooks and crannies of development, on this very small scale, or to overcome difficulties in the supply of services or in initial settlement, than any regional or county planning office. Both studies, finally, emphasise the many loose ends which they leave; and even to-day, when many of the gaps they noted have been filled by the geographers, town planners and the N.I.E.S.R., the lesson ought not to be lost.

The general impression which emerges from the two Surveys is, however, one of contrast, not agreement. The agreement is on details, the contrast on the general shape of things to come. This may probably be traced to, more than anything else, the remarkable stream of firms into Central Wales in the war years. Out of 110 firms surveyed in this area, thirty-nine came in 1939-46, as compared with nine of 122 in East Anglia. Both areas now possess a considerable number of firms using materials from elsewhere, and serving a national market. There are bus-bodies from Beaumaris, car-polish from Barmouth, colliery plant from Llanidloes: tea-trolleys, alarm-clocks and roller-skates from Holyhead, pyjamas from Newtown and corsets from Caernarvon. These are a few, from a long list. East Anglia has printing, engineering, furniture, clothing, nylon-spinning and an unexpectedly thriving trade in shaving-brushes. But it is clear that the war-time jolt to Central Wales has upset established prejudices in a way not to be expected in the greater continuity of Norfolk and Suffolk. Mr. Eastwood's measured account leaves the feeling that as things have been, so they will be. Perhaps a firm or two more may come from London. But they will go, if so, to three or four towns clustered near the biggest East Anglian cities; elsewhere the disadvantages are too great. To Professor Beacham, with the wider experience of Wales, these same disadvantages (and they must surely be even more marked at Machynlleth or Portmadoc) stand out rather as threshold costs, "not insuperable obstacles to further development," which have been and can be

overcome. Permanent cost differentials are one thing, initial obstacles another; a fact recognised, since these reports were written, in the Distribution of Industry Act of 1950.

There is something very attractive—and would be, one might almost say, even were it not based on the facts—in Professor Beacham's emphasis on the key role ("probably the most vital factor") of the local inhabitants themselves in overcoming these difficulties. It is for the Town Clerk, and the Women's Institute, and the Director of Education, to induct the new enterprise and keep awake the old, not for the remote though omniscient regional office in Cardiff. We know those "directors of local gas companies who were not the sort of people to risk money on capital development." But such attitudes are based, not on objective facts, but, as Professor Beacham shows, on generations of superior persons impressing on rural Wales, with the glib logic of *ex post*, that since there was in the past no industry there, therefore there is none and there never will be. The war debunked these ancient myths with a vengeance. It remains first and foremost for the central Welsh themselves to keep awake to and use the newly revealed possibilities; though no doubt a helping hand from the Board of Trade, as from the Development Commission, will not come amiss.

MICHAEL P. FOGARTY

Cardiff.

Irish Agriculture in Transition. By JOSEPH JOHNSTON. (Dublin: Hodges, Figgis and Co. Ltd. (Oxford: Basil Blackwell), 1951. Pp. xviii + 185. 15*s.*)

TWENTY-FIVE years ago, what is now the Republic of Ireland had a considerable export trade in agricultural produce, mainly with Great Britain. Much of this trade has now disappeared, and one of the main causes of the decline is the changes that have taken place during the past twenty years or so in the pattern of Irish agriculture. Professor Johnston, in this admirably lucid survey of the recent history and present position of the industry, analyses the main factors responsible for these changes, particularly the Economic War of the thirties with this country and the Second World War.

Climatically Ireland is pre-eminently suited to the production of livestock on the basis of a grassland economy, and Great Britain potentially provides an insatiable market for the surplus products of an agriculture of this type. But the Economic War led to a misguided attempt by Mr. De Valera's Government to

establish a tillage economy aimed at maximum self-sufficiency in human food crops. The author, who obviously has a considerable knowledge of agricultural science and practice, demonstrates conclusively by facts and figures, and particularly by comparison with concurrent agricultural developments in Northern Ireland, that the long-term trend of this policy was towards diminished production as well as diminished capacity to produce. By 1939, this was beginning to be realised, but the outbreak of the World War left no choice but to continue on the same lines. The result is seen in the fact that between 1929 and 1938 gross agricultural output in Eire was more or less stationary or even slightly reduced, whereas in Northern Ireland in the same period production increased by about a third. By 1946–47 Northern Ireland had succeeded in recovering the ground lost during the war, while in Eire production was still about 10% below pre-war.

Apart from the damaging effects of political and international upheavals, another cause of low output per man and per acre in Irish agriculture is its deficiency in capital equipment. Some striking data on this subject are presented in a chapter on "The Capital Assets of Irish Agriculture in 1939." Accurate figures on this subject are presumably no more easy to obtain in Eire than in this country, and Professor Johnston does not claim that his estimates do more than indicate the general order of magnitude. Incidentally, the value of these figures for purposes of comparison would have been increased if they had been adjusted to present-day price-levels. It is clear, however, that the industry is seriously handicapped by shortage of capital, especially in the form of implements and machinery—a shortage which is closely connected with the large proportion of small farms. The author has a good deal to say on the subject of the structure of the industry, and stresses the economic disadvantages of the policy, pursued by Irish Governments during the present century, of splitting up large estates into small holdings—whatever may have been the social advantages of this policy. He argues, with conviction, the economic merits of a good combination of small, medium and large farms, mutually inter-dependent as regards various supplies and services. He points out, for example, that to maintain high output and an adequate standard of living, the small farmer must depend largely on " farm-yard " production, *e.g.*, the keeping of pigs and poultry, and for this purpose must rely on purchased feeding-stuffs, either imported or produced on the larger farms which can afford the necessary tillage equipment. Professor Johnston feels that the

time has come for some consolidation of holdings, and is obviously impressed by the success which appears to have attended the establishment of largish farms by a number of co-operative creameries and by the advantages which such farms have brought to the smaller producers in their locality by, for example, the provision of pools of modern machinery available for hire, the sale of high-class dairy stock and the dissemination of improved technical methods. It is along these lines that he suggests future developments should take place. In a concluding chapter this theme is further developed, and the author comments favourably on some suggestions put forward in 1943 by Senator Orpen for a country-wide system of " Economic Farm Units " or co-operative farming societies. Whether this is the right solution to the problem is a question that can be answered only by those with an intimate knowledge of Irish conditions.

Whatever may be the merits of this particular project, few will dispute Professor Johnston's view, that, to achieve the increase in production and employment in agriculture which is desired, Eire should look to an intensive animal husbandry, based on intensive grass farming supplemented by the products of native tillage and such imported feeding-stuffs as she can afford to purchase. In the interests of our own larder, it is encouraging to learn that, following the recommendation of the Post-Emergency Agricultural Policy Committee, of which the author was an active member, this is the line of development which the Eire Government has recently been favouring.

C. H. BLAGBURN

The University,
Reading.

Agricultural Co-operation in the Commonwealth. By MARGARET DIGBY. (Oxford : Basil Blackwell, 1951. Pp. 172. 15*s.*)

IN this readable, vivid and well-informed survey Miss Digby attempts not to analyse the principles, mechanisms or quantitative aspects of co-operation, but to tell the story of the movement within the Commonwealth—of how it spread from one area to another, and of how the particular features of the movement became adapted to the geographical and social background in each case. To-day the movement is to be found in no less than seven Dominions and thirty-odd territories of the Commonwealth—and in Eire.

The author can certainly be congratulated upon the way in which she has performed her task. In some cases—notably in

the opening paragraphs of the section on India and Pakistan—she has achieved what amounts almost to a miracle of compression by presenting in a few sentences a remarkably comprehensive and accurate picture of the main characteristics of Indian agriculture and of the outstanding problems and difficulties confronting the cultivator. But the task undertaken and the highly concise manner necessitated by the decision to cover so much ground in so small a space, have inherent defects and limitations. Firstly, from the point of view of the history of co-operation and the way in which it has developed and spread, the "Commonwealth" basis seems highly artificial, particularly when the Canadian movement is considered apart from that of the United States. Partly for this very reason the section on Canada is, perhaps, the least satisfying: certainly the high claims made for the fascination and magnitude of achievement, and world-wide influence of the Canadian movement, hardly seem to be substantiated by the rest of the section. Secondly, the separate treatment, each in a few pages only, of the movement in so many areas—some large, some very small—means that this treatment can hardly avoid scrappiness, and lacks proportion. Moreover, the summaries of agricultural characteristics and problems—of which I have already mentioned that on India—can hardly convey the "atmosphere," except to those who are already well acquainted with the relevant area. This leads one to ask "For whom has the book been written?" The answer seems to be: primarily for those who already possess considerable knowledge—theoretical or practical—of co-operation in one or two countries or areas, who wish for a synoptic view of parallel movements elsewhere, and who may draw inspiration and suggestions for the improvement of "their" movement from even highly condensed accounts of experience elsewhere. Such readers, however, would have been greatly benefited by a bibliography, even if it had been confined to the most essential official publications and a carefully selected list of books.

For many decades it has been widely held that co-operation is the best method of securing agricultural improvement, especially in un- or under-developed countries. But it can hardly be denied that—with one or two outstanding exceptions—the progress and achievements of the movement have been disappointing and limited. Why should this be so? Dr. C. R. Fay, in his foreword to Miss Digby's book throws out a hint that may supply the answer. His third "lesson" to be learnt from the history of co-operation within the last fifty years is that "co-operation is

founded on certain principles . . ." which "must be taught not only to the co-operating farmers, but to the staffs of co-operative organisations, from the junior office boy upwards," I would put it like this. Co-operation is like a chain, its strength depending upon that of its weakest link. The links consist of all associated with the movement. Hence the strength and success of co-operation are limited in the last resort by the weaknesses of humanity itself—and these, God wot, are great. The conclusion is not that co-operation is not the best remedy, but that it can only succeed by a slow process of education and requires infinite patience and perseverance.

VERA ANSTEY

London School of Economics.

Demographic Survey of the British Colonial Empire. By ROBERT R. KUCZYNSKI. Vol. 1. West Africa. Vol. 2. South Africa High Commission Territories, East Africa, Mauritius, Seychelles. (London: Oxford University Press, 1948–49. Pp. 821, 983. 75*s*. each.)

AT the time of his death in 1947 the late Dr. Kuczynski had completed the collection of material for a demographic survey of the British Colonial Empire, and had written the text of the sections dealing with a number of territories. The present two volumes represent part of this work; the remainder will be published shortly under the editorship of Mrs. B. Long, Dr. Kuczynski's daughter, who had been assisting her father in his work.

The reviewer of these volumes is faced with almost insuperable difficulties. In his preface the author himself compares the survey to a series of monographs on different territories. With his usual thoroughness Dr. Kuczynski has made himself familiar with practically every report, official or unofficial, which has any bearing on subjects of demographic interest, as witness the impressive bibliography and the copious *verbatim* quotations with which the survey is filled. In fact, the work is much more than a survey, it represents a careful historical appraisal of all demographic sources in the areas which have been selected for study. There can only be few who are competent to criticise and appreciate Dr. Kuczynski's findings in detail, and the present reviewer is certainly not one of them. I shall therefore confine myself to an indication of the general results and to some comments on the scope of the work.

The *Demographic Yearbook* of the United Nations lists Africa

as one of the areas in which population statistics are "poor" to this day, and what is true in the present holds *a fortiori* of the past. Again and again as one turns over the pages one is struck by the ignorance about the simplest facts relating to population, and by the inadequacy of and discrepancies between the guesses, for they are generally no more than that, made by the authorities in these territories. Even the figures for total numbers are subject to large errors, and knowledge about such vital indices as birth rates, death rates and infant mortality rates is non-existent in most territories. Some figures which have been stated repeatedly seem to have reached their present authority merely through being hallowed by age. Indeed, the book should serve as a salutary corrective to those who make glib and facile generalisations about the present population and its rate of increase in the world as a whole, by showing how tenuous are the data on which they rely. The situation is only now beginning to improve in some territories; a large part of this improvement is due to Dr. Kuczynski's own work in the last years of his life as Demographic Adviser to the Colonial Office.

Dr. Kuczynski submits all the reports and guesses to a very careful and exhaustive scrutiny. He describes the systems of census-taking and vital registration in great detail, and gives accounts of what is known about the major population movements. He critically assesses the accuracy of the reports that have been made about the fertility and mortality of the population, both native and non-native. In the course of his discussion he often goes beyond the narrow confines of demographic history and gives some fascinating glimpses into the general history of the territories that he is dealing with.

It is a pity, however, that he has not written a shorter book. The material at his disposal is too deficient to permit him to build up a coherent and certain picture of the demographic development of the territories under consideration. His task is therefore mainly one of criticism, and it is questionable whether the vast amount of quotation from official reports is really necessary. The specialist student of one particular territory will in any case have to go back to the original sources, and would probably have welcomed a rather larger ratio of commentary to quotation, particularly as there was probably no one who could comment with greater authority than Dr. Kuczynski. The reader who is interested in the broad outlines only will often find it difficult to see the wood for the trees, and will have to search for the main points in a mass of detail. Dr. Kuczynski has written an account which will in all

probability remain the standard work on the subject for a long time, but the task of producing a summary for the non-specialist reader still remains.

E. GREBENIK

London School of Economics.

Analysis of Society. By LEO SILBERMAN. (London : William Hodge & Co., 1951. Pp. x + 262. 15*s*.)

MR. SILBERMAN has written an interesting and original book. At times, as one progresses through it, one is inclined to substitute the adjective " peculiar." This is particularly the case at the beginning and at the end. There seems to be something odd about the plan of the work. Part I manages to embrace within its compass Comte's law of the three stages and a short history of Civil Service examinations. We are told that there is a correspondence between the first chapter and the last, the second and the last but one " and so on." This is a peculiar structural device which, however, the reader might be able to appreciate if he could in fact discover the alleged correspondence.

But, if the reader persists, he will find that a plan emerges. Mr. Silberman's subject is not social analysis *per se*, but the application of social analysis to the education of those who make and execute policy (hence the account of Civil Service examinations) and to the solution of social problems. His book is addressed, so we are told on the jacket, " to men and women beyond the academic circle." They will, one fears, find certain chapters rather beyond them—for instance the first (Approaches to Sociology) and the chapters on social development and methodology. In the first chapter the author classifies sociological literature under four heads : encyclopædic, formal, social studies and social analysis. A classification of this kind is never quite satisfactory, and in this case it leads to such dubious decisions as the assignment of Durkheim to the encyclopædists and of Max Weber to the formalists. But Durkheim's study of suicide is surely an outstanding example of social analysis, while Weber's " ideal types " are a bridge between formalism and the historical method he used to such effect.

The central part of the book, which explains how social analysis works at different levels, is by far the best. It reveals an extremely wide range of reading, and is enlivened by an unusual diversity of references. It is both informative and stimulating. Mr. Silberman distinguishes five levels of analysis : culture,

social structure, human needs, human relations and social development. The term " culture " is used of those simple and homogeneous societies whose way of life can be pictured on a flat surface, as it were. Social structure introduces stratification and three-dimensional models. The other three levels are roughly the biological, the psychological and social dynamics. The treatment of the first four is clear, but that of the fifth sadly confusing. There follows the chapter on methods, devoted wholly to social surveys by question and interview.

This very restricted conception of the methodological issues involved leaves the reader without any guidance as to how the various approaches can converge to produce a synthesis or a theory. The author's definition of social analysis states that it should " contribute to the validation of a theory of human behaviour, which is useful to the policy-maker." But this vital link of theory is missing from the accounts of how analysis works. And, in fact, the final chapter, on " The Limits of Social Analysis," leaves one with the impression that the role of analysis is to provide an exact and penetrating description, and nothing more, and that the policy-maker must then bring to bear, not only his own system of values by which he selects his ends, but also his own practical judgment in the selection of means. Analysis will lay the facts before him, and he must do the rest, except in so far as the sociologist, too, having got as far as science will take him, brings his own rather different judgment to bear on the problem. Sociology is warned not to try to ape the natural sciences; then, as it frees itself from their influence, " the study recaptures some of the ' intuitive ' knowledge lost in the progress of rational thinking." This would suggest that the intuitive knowledge of the sociologist and the practical judgment of the policy-maker must both be used to extract some positive message from the analytical material, which is barren and passive until touched by one or other of these life-giving wands. But then we read that " social theory must enlarge the area in which intelligence can safely function, the area where rationality must replace rationalisation." And this seems to invite the sociologist, acting as scientist, to carry things a stage farther towards a positive conclusion, or at least a plausible hypothesis. It may well be that the author's views on all this are very sound and sensible, but they do not emerge with sufficient clarity, and the main reason is that he never tells us what he understands by " social theory."

Mr. Silberman has attempted a supremely difficult task, and

carried it through with great courage. His book does not only tell the lay reader much that he wants to know, but it also gives the social scientist food for thought and matter for argument. It is a pity that the style is sometimes marred by slovenly syntax and that there are too many misprints. Surely there is a " not " missing from the sentence on p. 33 beginning " Pure economists may . . . ", and an intrusive " not " in the top line of p. 134.

T. H. MARSHALL

London School of Economics and Political Science.

The Ethics of Redistribution. By BERTRAND DE JOUVENEL. (Cambridge University Press, 1951. Pp. ix + 91. 8*s.* 6*d.*)

THERE is a borderland between economics and politics which is too seldom studied directly, and this borderland has widened with the growth of the " welfare state." It is an area wherein financial and fiscal policies may produce unexpected and unintended political results, and where political activities may be carried on with false economic assumptions. M. de Jouvenel, in these two Boutwood Lectures given at Corpus Christi College, Cambridge, in 1949, examines part of this borderland: the field of study concerned with the principles and the ethics of that process of redistributing incomes by state action which began over forty years ago in Britain with Lloyd George's budget. He contends that we have, more by drift than by design, created a " redistributive state "; that the principles and consequences of this creation have become confused with socialist ideals with which, in fact, they have little fundamental affinity; and that the ethical social doctrines of socialism have been lost sight of in the confusion.

In the course of his provocative and witty argument, M. de Jouvenel draws several very valuable distinctions. He insists, quite rightly, that agrarian egalitarianism which found its modern expressions in the redistribution of land in eastern Europe and in the Chestertonian notions of " three acres and a cow " is distinct from both the socialist ideal of equality and the present redistribution of income in the welfare state. It was concerned with a redistribution of capital resources. Socialism, beginning in its modern forms with Rousseau, looked to the creation of a " good society " wherein men would have better relations with one another and would find more brotherly co-operation. It therefore visualized a diminishing role for the state. But by its confusion

with the aim of equalising incomes through the redistributive state, Socialism has adopted the materialistic fallacies of the social order it sought to replace. Incomes are regarded as only means to consumer-enjoyment, and consumption is thought of as individualistic, selfish and isolated. "The mode of thought which tends to predominate in advanced circles is nothing but the tail-end of nineteenth-century utilitarianism." One is reminded of the description of Marxism by the late Lord Keynes as "the final *reductio ad absurdum* of Benthamism." Inevitably the role of the state, far from diminishing, becomes central, and M. de Jouvenel shows by statistical calculation that in Britain, at least, "redistribution is in effect far less a redistribution of free income from the richer to the poorer, as we imagined, than a redistribution of power from the individual to the state."

Incidentally to his central argument, he makes several shrewdly penetrating observations: the preferential treatment accorded, both in taxation and in social outlook, to corporate bodies as against individual persons; the extent to which personal and family consumption is socially creative; the degree to which redistribution of income is not vertical but oblique, so that "for the most part the buying power which is redistributed comes out of the same social layers as receive it." He is apt to overlook some of the more beneficial consequences of the social-service state, and to pass decisive judgments on social changes which are still so incomplete as to demand some suspension of judgment. But this little book is crammed with independent thinking, it challenges fresh thought, and deserves attention from a wide public as well as from professional economists.

DAVID THOMSON

Sidney Sussex College,
Cambridge.

The Eastern Zone and Soviet Policy in Germany, 1945–50. By J. P. NETTL. (London: Oxford University Press, 1951. Pp. xix + 324. 21*s.*)

THIS most informative book clearly shows the absence of an iron curtain between Western and Eastern Germany. Though the barriers running through Berlin, which separate two antagonistic social systems, grow higher, there are neither Customs visitations nor passport inspections in the city. One just walks across from one world to the other, and if one is not very unwise or very unlucky, one returns as unmolested and unsearched as

one entered. Outside Berlin there is a strong wire-netting with control points for entry and exit; its meshes are wide enough to let through an unlimited amount of reliable and unreliable information.

Mr. Nettl has made most excellent use of these opportunities. After describing, in perhaps a little too doctrinaire a fashion, the dissolution of the Third Reich, he explains the Allied plans for running a divided Germany and the Soviets' way of taking over their zone. Almost immediately they started political party life in order to bring about a Semi-Soviet State. Mr. Nettl describes in detail the organisation of the political parties and the formation of five Länder governments, the resumption of economic activities and the Soviet reparation policy. He analyses the Soviet-inspired planned economy, which is not merely planned but dictated, and on its administrative side as much *Befehlswirtschaft* (Command Economy) as was the Nazi regime. He discusses interzonal relations—especially trade relations—between the Eastern and the Western zones, and the Eastern bloc. His, perhaps a little too optimistic, conclusion is, that up to now the Sovietisation of Eastern Germany is superficial, and could be got rid of easily, were Russia's hands withdrawn.

The industry with which the author has collected an immense amount of facts, and the intelligence with which he marshals them, cannot be praised too highly. He aims at and achieves a high degree of (sometimes a little inhuman) impartiality. Occasionally one has the impression, that he has some sympathy with the Soviet system as an abstract proposition; he certainly has an outspoken dislike for its staunchest opponents, the old German Social Democrats. Considering the difficulties he had to overcome, it is almost ungenerous to cavil at some details. Yet to call the German "peasant" a "farmer," because the word peasant is bound up with a more feudal social system, is neither correct nor sensible. The Junker was a farmer, so is the British tenant. The author is not always on safe ground when dealing with pre-Nazi Germany. He has not given sufficient consideration to the fact that Eastern Germany is the homeland of the Lutheran creed, and that the fear of its fate under complete Sovietisation plays a decisive part in German interzonal relations.

M. J. Bonn

London.

British Trade and the Opening of China 1800–42. By MICHAEL GREENBERG. (Cambridge University Press, 1951. Pp. xii + 238. 21*s*.)

MR. GREENBERG in his long-awaited book is the first and, it is to be hoped, not the last historian to add to our knowledge of British economic relations with the Far East by exploring the rich mine of the Jardine Matheson collection now in the Cambridge University Library. He has made brilliant use of his source material to throw new light on the collapse of the East India Company's dominant position in the China market, on the pattern of trade constituting the classical Britain–China–India triangle and on the rise of the Agency Houses. Eschewing the stale paths of Anglo-Chinese diplomatic history, the author has pioneered in a neglected field of economic history posing problems of interest to the economist no less than to the historian. His achievement justifies the expectation that the Jardine collection will contribute not only to the resolution of such not altogether unconnected cruces as the differential impact of the West on China and Japan and the development of large-scale markets for commodities such as opium but also to our understanding of more specific questions, such as the emergence of exchange rates with countries previously without organised foreign trade and the failure of foreign capital to invest in industry in China until *after* the Treaty of Shimonoseki.

The story of the rise of the House of Jardine Matheson fills a gap in the history of the export merchant who played so significant a role in Britain's industrial and commercial expansion. William Jardine and James Matheson are splendid paradigms of the Schumpeterian entrepreneur-innovator. While they did *not* originate the export of Indian opium to China, they organised it in a new way as a systematic large-scale enterprise, ruthlessly breaking down the old pattern of doing things, opening up coastal trade and integrating their Far Eastern commercial, shipping and financial activities with their world-wide ramifications into one organic whole. Their very success vividly illustrates Schumpeter's concept of creative destruction, or perhaps more appropriately, destructive creation. For the enormous expansion of the opium trade inevitably led up to the transformation of China's economic relations with the West after the Treaty of Nanking; more specifically, it resulted first in the ending of opium's unique position as a contraband commodity, second in the eventual extension of Chinese poppy cultivation which broke

the Indian Government's virtual monopoly and finally in the broadening of Jardine Matheson's business activities. It is a pity that the firm's account-books are defective in data on the flow of capital from Canton to London, since the lacuna makes it difficult either to arrive at plausible estimates of net profits and the ratio of profits to investment or to compare their profits with those of domestic enterprises.

It is well to emphasise that the trade in opium was no hole-and-corner affair, though the claim that it was "probably the largest commerce of the time in any single commodity" appears slightly exaggerated. The fiscal importance of tea to the British and of opium to the Indian Government is clearly brought out; in fact, revenue considerations constituted a decisive factor in the Indian Government's opium policy throughout the nineteenth century, as Owen's monograph on *British Opium Policy in India and China* demonstrates.

Mr. Greenberg makes masterly use of the *ipsissima verba* of the principal protagonists to illustrate and drive home his points. One might add an item to gladden the hearts of disciples of Max Weber and Tawney: Innes, the captain of a Jardine vessel trading up the China coast, recorded in his diary, "Too busy delivering (opium) to read my Bible or to keep my journal."

S. ADLER

Department of Applied Economics,
Cambridge.

Taxation in Medieval England. By S. K. MITCHELL. Edited by S. PAINTER. (New Haven: Yale University Press. (London: Geoffrey Cumberlege), 1951. Pp. iv + 713. 32*s.* 6*d.*)

DESPITE its title, Professor S. K. Mitchell's last work, edited posthumously, deals mainly with taxation in the twelfth and thirteenth centuries, and most of the new material used in it comes from the reigns of John and Henry III. He traverses much of the ground covered in his earlier study of the taxation of those two reigns, but the treatment is different. Instead of discussing together all the taxes of each year in order to establish all the facts about them, an attempt is made this time to trace separately the evolution of each type of tax. The author's interests were administrative and constitutional, and most of the book is devoted to tallage of the royal domain, financially the most promising of the taxes levied by the king's sole authority, and to taxes on personal property round which the conflict about

consent to taxation mainly centred in the thirteenth century, with some attention paid to scutage until the time of Magna Carta. The development of the central and local machinery of assessment and collection of the taxes on personal property is traced very fully, linking up with Willard's exhaustive account of these taxes in the last period of their evolution between 1290 and 1334.

The four chapters devoted to the tallage form the most original part of the book. Little new light is thrown on the controversial problem of its origins, but Professor Mitchell's account of tallage from 1168 onwards is far more elaborate and complete than any previous study of this somewhat neglected tax. Some important points emerge. The practice of farming out domain manors gave many important men a personal interest in keeping royal tallage on these estates at a customary low level, and frequently it involved a complete abandonment of royal claims to tallage an estate. This must be taken into account in any attempt to explain the inability of John and Henry III to increase the yield from it and the consequent preference of Edward I for extending the taxes on personal property to the domain towns and manors; while these taxes needed parliamentary consent, they extracted much more money. An alteration in the character of the tallage itself was attempted by Edward I in 1304. From a tax levied according to the local customs of the towns and manors liable to it, without any uniform scheme of assessment, it changed into a levy of a specified fraction of the assessed value of personal property and revenues. This promised a larger and more flexible revenue, and the precedent was followed in the instructions for the collection of the two subsequent tallages in 1312 and 1332. The author conjectures that the change explains the vigorous opposition to this tax on the latter occasion and the disappearance of tallage after 1332.

Professor Mitchell pays little attention to social and economic changes lying behind the development of royal fiscal policies, and he was not concerned with providing evidence for economic historians. But much detailed information can be gleaned that should be of interest to them. Much valuable material has been assembled about assessments of towns and manors to tallage in the later twelfth century, and the tables in which this evidence is set out usefully supplement the information provided in Stephenson's *Borough and Town*. There is much evidence about the terms on which royal estates were farmed out by Henry II and his successors, and it reveals that while tallage imposed on towns frequently

surpassed by a considerable margin the amount of their annual farms, it seldom did so in the case of rural manors. But even in the twelfth century payments from manors were as prompt as those from towns. All this evidence reinforces the large body of other information pointing to the possession of appreciable monetary resources by others than townsmen in the later twelfth century.

The book does not make easy reading, and it is incomplete; there is no doubt that had Professor Mitchell lived to publish it himself it would have appeared in a more finished and readable state. To the same reason ought probably to be ascribed the neglect of several works published in the last decade, as the result of which some sections of the book, like the discussion of the crisis of 1297, do not represent a wholly acceptable summary of the present state of our knowledge. But it is a very valuable work, representing a lifetime of research and wise thinking, and it will be indispensable for students of mediæval taxation. On many of the matters discussed Professor Mitchell has said almost all that we are ever likely to know. Every mediæval historian has much to learn from it about the ways of mediæval Englishmen in their dealings with royal authority.

E. B. FRYDE

University College of Wales,
Aberystwyth.

The Works and Correspondence of David Ricardo. Volume III: Pamphlets and Papers, 1809–1811. (Pp. viii + 437.) Volume IV: Pamphlets and Papers, 1815–1823. (Pp. vi + 422.) Edited by PIERO SRAFFA with the collaboration of M. H. DOBB. (Cambridge University Press, 1951, 24*s.* each volume; available on special terms to Fellows of the Royal Economic Society.)

THE two volumes now published in Mr. Sraffa's edition of Ricardo contain Ricardo's shorter writings, both published and unpublished, and they are for the most part concerned with monetary questions and public finance. With the Speeches and Evidence to Parliamentary Committees, included in Volume V, they cover almost everything Ricardo had to say on these matters, excepting the more systematic discussion of taxation in the *Principles*.

First there is a group of papers belonging to Bullion Committee controversies in 1809–11. There are three newspaper

letters before, and three after the Bullion Report, the *High Price of Bullion*, and the *Reply to Bosanquet*. All these were written for publication. The latter part of Volume III contains a number of notes from Ricardo's manuscripts of the same period, also mainly on monetary questions. Of these the *Notes on Bentham* (Sur les Prix) are the most extensive, but on the whole also the least interesting. The *Notes on the Bullion Report* show Ricardo's step-by-step reaction to the Minutes of Evidence and to a few passages in the Report. The *Notes on Trotter* (who had written a criticism of the Bullion Report), the *Observations on Trower's Notes on Trotter* and the *Observations on Vansittart's Propositions* all belong to the same phase. They are somewhat repetitive and except as demonstrations of Ricardo's sword-thrusts in controversy they show little if any elaboration of the ideas developed in published pamphlets.

With these monetary writings of 1809–11 may be linked the later pamphlets included in Volume IV—*Proposals for an Economical and Secure Currency* (1816) and the posthumous *Plan for the Establishment of a National Bank*. The main interest of these is institutional: they include the elaboration of the Ingot Plan, a long and detailed examination of questions relating to the Bank of England's profits, and the proposal to place the note-issue in the hands of a body of "National Commissioners." With a brief passage in the 1811 Appendix to the *High Price of Bullion* and an important letter to J. B. Say (appearing in a later volume) they constitute Ricardo's contribution to the genesis of the Bank Charter Act of 1844. On the difficult questions of the Resumption of Cash Payments there is an important section in the pamphlet *On Protection to Agriculture* (1822), also included in Volume IV, but for this subject the reader must go mainly to Volume V (Speeches and Evidence). Other previously published work in Volume IV consists of *An Essay on the Influence of a low price of Corn on the profits of Stock* (1815) and *Funding System*, the *Encyclopædia Brittanica* article of 1820. The manuscript notes in this volume include *Fragments on Torrens concerning Value* (1818) and two drafts on *Absolute Value and Exchangeable Value* (1823) which should be read in conjunction with the editorial introduction to Volume I (pp. xl to xlix) the relevant passages in the *Principles*, and several of the letters (especially those to Mill and Malthus).

The papers on Blake's *Observations on the Effects produced by the Expenditure of Government* (1823) include not only "Ricardo on Blake" but also "Blake on Ricardo on Blake." These notes elaborate Ricardo's views on "Say's Law," but show that neither

Blake nor Malthus were able to move Ricardo appreciably from his extreme doctrine. They are interesting in showing how Ricardo dealt with particular reformulations and examples of the Malthus-and-Blake view on the variability of total demand, but they do not reveal any novel ideas.

In these two volumes the passages which were most influential in their day strike the modern reader as well written but often crude in their main arguments (the analysis of the effects of the Corn Laws is an exception). The really fascinating play of Ricardo's mind is to be seen rather in those passages where he is turning his torchlight on a group of specific facts, especially statistical facts. For example, in the *Reply to Bosanquet*, after Bosanquet had posed as the practical man who would write about the real facts of the case Ricardo turned on him with a battery of elaborate factual evidence as though he had an efficient intelligence department in his stockbroker's office; and similarly when he discussed the profits of the Bank of England (though his basic material on this was inadequate) and the manipulation of the Sinking Fund. When discussing questions more generally, Ricardo adds very little to our knowledge of the institutions of his day: there are some useful references to the handling of Exchequer Bills, but that is almost all.

As in reading the first two volumes, every reader will again be delighted with the magnificent editorial work that has gone into the preparation of these volumes. In every respect the reader is pampered, with interesting notes, cross-references and the printing of the passages from the authors upon which Ricardo is commenting. In references to the Bullion Report and Evidence, the page numbers used are those of the octavo reprints. As an owner of the original folios but not of the octavo reprint, I thought I had for once ground for complaint against Mr. Sraffa, but a few inquiries have shown me that most existing copies are of the octavo reprints: thus Mr. Sraffa has catered correctly for his customers even in this.

Among the editorial contributions are notably the appendices to these two volumes. In Volume IV there is a short examination of the identity of the "Ingenious Calculator" of the pamphlets of 1816 and 1824; and a letter to the *Morning Chronicle* disclosing voting in the Bullion Committee. Best of all is the detective story at the end of Volume III, establishing John Parish as the "Mr. —, a Continental Merchant" who gave evidence before the Bullion Committee. This is as fascinating a piece of detective work as I have read for a long while.

Twenty years has been a long time to wait for this definitive edition, but the result is of such excellence as to make the waiting well worth while.

R. S. SAYERS

London School of Economics.

The Works and Correspondence of David Ricardo. Volume V: Speeches and Evidence. Edited by PIERO SRAFFA, with the collaboration of M. H. DOBB. (Cambridge University Press for the Royal Economic Society, 1952. Pp. xxxiv + 534. 24*s.*; available on special terms to Fellows of the Royal Economic Society.)

THIS volume consists of an Introduction by the Editors; of Ricardo's Speeches in Parliament as member for Portarlington 1819–1823; of his Evidence before different Committees of Parliament, Commons and Lords, of which the most important is that on the Resumption of Cash Payments, given in March 1819; of minor speeches before the East India Court and other bodies; together with two papers on Parliamentary Reform. The introduction explains how he came to sit for this pocket borough in Ireland and how much it cost him, and the difficulty, in the imperfect reporting of those days, of knowing what he really said. There is an excellent analytical index of persons, with dates of office for the leading figures in the scene.

The picture that emerges is that of an independent member, consistently liberal; in his own field of finance supremely well informed; dogmatic and yet benevolent; a keen theorist, and yet rather naïve. He hoped much from vote by ballot; but it does not seem to have struck him as monstrous that he procured his seat by illegal purchase and never set foot in the country he was supposed to represent. 1819–1823 were years of great deflation, when the misery of the working class was acute. But he resisted Littleton's effort to repress truck; and Huskisson's bill for maintaining apprentices in the merchant navy. As for the main trouble: "The people had the remedy in their own hands. A little forethought. A little prudence (which probably they would exert, if they were not made such machines of by the poor law), a little of that caution which the better educated felt it necessary to use, would enable them to improve their situation" (p. 303).

As early as 1821 he declared for "the total repeal of the corn laws" (p. 79). But this to his ingenious mind was compatible with countervailing duties—to countervail "the peculiar burthens

to which the farmer was liable" (p. 138). It is not surprising that he was misunderstood. For while at one moment he spoke of peculiar burdens, such as poor rates, in comparison with those borne by other classes in the community (p. 45), at another he said:

> "He wanted a countervailing duty to the home grower, to recompense all the additional charges which he had to pay in taxes above the charges borne by the foreign grower" (p. 82).

Again, Ricardo had as great a horror of National Debt as Hume or Adam Smith.

"How was the debt to be paid off? He would tell his hon. friend, if no means were taken to pay it off, that he was sleeping on a volcano" (p. 268); and consistently with this, he advocated a drastic levy on capital, to which all forms of wealth, including property, in the funds would contribute. But such a levy would be a very drastic tax, and capitalists surely would have a real incentive "to quit" and to "leave the country," if they knew how. The theorist in Ricardo was here stronger than the statesman.

Ricardo was at his best in seeing through shams, and in particular the sham of a Sinking Fund which was an excuse for lax finance. Here Robinson and Huskisson, who in 1823 took over from Vansittart, had the strong support of Ricardo; and with Robinson at the Exchequer and Huskisson at the Board of Trade a great quinquennium of financial and fiscal reform was accomplished. But it would have rested on quicksand if the currency itself had not been stabilised and secured against depreciation, In his great speeches on Agricultural Distress, Return to Cash Payments and the Budgets of the Day, he converted to his views all those who counted and won the reluctant admiration of his opponents. It only remained for Peel to set his seal on the pound sterling by the Bank Act of 1844. Lord Brougham's appreciation on Ricardo in Parliament is given on pp. xxxii–xxxiv, preceding the Florence bust of 1822.

It is perhaps unnecessary to add that the scholarship of the editors is beyond reproach. We all look forward with renewed zest to the four volumes of letters and the final miscellany.

C. R. Fay

Belfast.

NOTES AND MEMORANDA

Mr. Wiles and the Normal Cost Theory of Price

1.0. In a recent article,[1] Mr. P. Wiles seeks to reconcile the "full-cost principle" with the marginal theory of price. The former is associated with the pioneering work of Messrs. Hall and Hitch; it should not be confused with the general theory of the formation of prices in manufacturing industry set out in Mr. P. W. S. Andrews's writings, and referred to hereafter as the *normal cost* theory.[2] This distinction, however, is not drawn by Mr. Wiles. The purpose of this note is to argue that, whatever is true of the full-cost approach, the normal-cost and marginal theories cannot be so simply reconciled as Mr. Wiles has suggested.

2.0. The new element which emerges from Mr. Wiles's analysis is the (so-called) "l.r.m.c. (p.a.)."[3] His point of departure is the contention that certain courses of action cost more "in the long run," *i.e.*, if persistently pursued over a long period, than "in the short run," *i.e.*, if carried out now, but not continued. Then the l.r.m.c. (p.a.) function is drawn to depict the "true" marginal cost of production, in the current period of production (and subsequent periods), of each level of output on the assumption that it is to be maintained over a (long) period, and with the plant of the firm remaining unchanged.[4]

But what precisely are the costs which enter into the function? It is argued that to maintain output beyond OX in Mr. Wiles's Fig. 1 (p. 518) without new plant would involve costs in addition to actual production costs, in the form of allowances for: (1) the lack of plant flexibility in the event of breakdowns; (2) the

[1] "Empirical Research and the Marginal Analysis," Economic Journal, September 1950. In what follows, page references in brackets in the text will refer to this article.

[2] See in particular P. W. S. Andrews, *Manufacturing Business*. See also my article, "Goodwill and the Normal Cost Theory of Price," *Economic Record*, May 1952; and Miss E. Brunner's forthcoming "Competition and the Theory of the Firm," *Economia Internazionale*, August and November 1952.

[3] "Long run marginal cost, with partial adaptation." Similarly (in what follows), "s.r.m.c. (p.a.)" = "short run . . ."

[4] The former condition is that which distinguishes the present concept from the orthodox "user cost."

The terminology, *long-run* m.c. (p.a.), if not entirely inappropriate, is very misleading, since the l.r.m.c. (p.a.) function relates to the determination of equilibrium in the current period of production—which is true also of the traditional short-run curve, but not the long-run curve. On the other hand, the established connotation of the latter is different from what is implied by Wiles's usage of "long run."

increased wear and tear due to fast running, and neglect of maintenance work; (3) the reduced ability to meet extra orders from regular customers, losses thereby resulting both directly and by repercussion on existing goodwill; and (4) the risks of illiquidity entailed in locking up working capital in the high volume of stocks it would be necessary to hold.[1]

Thus "l.r.m.c. (p.a.) . . . rises very sharply in the neighbourhood of X. . . . In many cases . . ., it is doubtless quite vertical at X" (pp. 524–5).

The conflict is now resolved. Empirical research indicates—according to Mr. Wiles (p. 521)—that in all circumstances, so long as there are no additions to the plant, the business will produce the output OX; this, too, is the full-cost theorist's "no very determinate" equilibrium output. Now (he argues) "granted p.a.," this is quite compatible with the marginal analysis. For it is "long run profits [which] are always maximised . . ." (p. 528). The firm then, will produce at OX, because thereby "it is doing the best it can for itself with its *given* equipment" (p. 524): at this point, MC (*i.e.*, l.r.m.c. (p.a.)) = MR (*i.e.*, l.r.m.r.). At the same time, mc (*i.e.*, s.r.m.c. (p.a.) $\neq$ mr (*i.e.*, s.r.m.r.)—*i.e.*, "short run profits . . . are not maximised" (p. 528).[2]

Such is the essence of Mr. Wiles's reconciliation. We now consider its validity and relevance *vis-à-vis* the normal cost theory.

3.0. At the outset it is evident that in the nature of the case the costs which enter into l.r.m.c. (p.a.) are not subject to pecuniary expression; not even in the sophisticated sense of calculable, and hence insurable, risks. (This might be possible in respect of elements (1) and (2); but it is abundantly clear that the entrepreneur could not effectively insure against the highly uncertain and cumulative effects envisaged under (3).) In so far as the entrepreneur does regard these costs in his price/output policy, then, the l.r.m.c. (p.a.) function is hazy, notional and subjective in the extreme.[3]

In the normal cost theory, on the other hand, these difficulties do not arise. When it comes to the determination of the firm's price/output policy (in that theory), the considerations set out in defining l.r.m.c. (p.a.), above, are irrelevant. Where they are

[1] Wiles, *op. cit.*, pp. 518–19, 525–6. Mr. P. W. S. Andrews drew attention to all these factors in arguing that business men normally *plan* for a reserve of capacity (*op. cit.*, pp. 87–95).

[2] Hence (according to Wiles) the "determinant," profit maximisation, is banished from the picture by the full-cost theory (p. 527).

[3] Wiles recognises this (*op. cit.*, p. 526). Cf. also P. Streeten, "Reserve Capacity and the Kinked Demand Curve," *R.E.S.*, 1950–51, p. 105.

relevant is in explaining why the cost curve is as it is up to *OZ* in Mr. Wiles's Fig. 1; *i.e.*, in explaining why the entrepreneur plans for the operational output *OX*, *along with* a reserve of capacity beyond that (and hence, constant average direct cost over the range). That, indeed, is the context in which Mr. Andrews in fact first raised these questions.[1] In the development that follows they are allowed their proper effect in the theory of price formation and the theory of investment of the firm. But the question of drawing in, on a diagram depicting actual cost alternatives, a curve depicting costs which in the nature of the case are not reducible to pecuniary magnitudes (were it even true that the business man contemplated attempting to do so, which is doubtful!) does not arise.

3.1. Consider now the operational significance of the l.r.m.c. (p.a.) curve and its relevance to the conflict between the normal-cost and marginal theories. This raises the question of the nature of the equilibrium determined by the curve.

For this purpose it is essential to distinguish carefully the presumption in view as to the nature of the demand for the product of the firm. There is first the demand situation which occupies a central place in Mr. Wiles's exposition, namely, those cases in which "demand . . . is always perfectly elastic to the firm; *i.e.*, price $= mr$ in both s.r. and l.r., whatever the reigning level of that price may be" (p. 521). There is a qualification to this: "in some of the . . . cases considered, there is an absolute stop to the demand curve at a certain point" (see Mr. Wiles's Fig. 2, p. 521). Let this "kink" in the demand curve occur at the volume of sales *OD*, say.

Now there is a greater difference between these two cases than this statement of the matter would suggest. We shall begin with the latter. (If $OD > OX$, this case raises the same questions as the former, to be discussed in § 3.1.2. Here we shall consider only those cases in which $OD \leq OX$. It is assumed further that the elasticity of the demand to the firm for a fall in its price is $\leq 1/1 - \frac{\alpha}{p}$, where α is the constant s.r.m.c. (p.a.) about this point.)[2]

3.1.1. In these circumstances Mr. Wiles's analysis is scarcely relevant. Over the range of output up to *OX*, he says (p. 525), "none of . . . [the factors making for the divergence between

[1] *Op. cit.*, pp. 87 ff.

[2] If the "prime costs" per unit of the Census are any indication of s.r.m.c. (p.a.), then a ratio, α/p, of the order of 0·6 to 0·7 seems reasonable. That would give $\epsilon \leq 2{\cdot}5$–$3{\cdot}3$.

l.r.m.c. (p.a) and s.r.m.c. (p.a.)] amount to very much." The level of output, then, is determined at OD where the (discontinuous) curve of mr cuts the cost curve. Manifestly, however, unlike the two blades of Marshall's scissors, it is the former curve which is the decisive and determining factor. The l.r.m.c. (p.a.) analysis is to that degree irrelevant. The result in fact does not differ from that determined by the intersection of the s.r.m.c. (p.a.) curve and the revenue curve—the orthodox analysis of this case.

Nevertheless, a measure of reconciliation emerges here. As argued more fully below, for the normal cost theory the volume of output (sales) in the current period of production is demand-determined, and would be OD. At this output, it is true, $mr = mc$; or more correctly, $mr > mc$ "to the left," and $mr < mc$ "to the right." But this measure of reconciliation is in no way dependent on Mr. Wiles's analysis of l.r.m.c. (p.a.).

Indeed, the whole weight of that analysis is directed to the explanation of equilibrium (just) beyond OX; equilibrium *cost*-determined by the sharply rising l.r.m.c. (p.a.) curve, just as equilibrium in the present case is *demand*-determined by the "kink" at OD. We turn then to the first case, "demand . . . perfectly elastic to the firm, etc."

3.1.2. In this case Mr. Wiles draws in the usual horizontal sales and revenue curve, extending beyond OX.[1] We may interpret this situation in two ways. The first is to regard the firm as producing under the conditions implied in the orthodox conception of perfect competition. The firm, that is, has a perfectly random relation to the custom of the market.

Now *granted* the almost vertical l.r.m.c. (p.a.) curve, the equilibrium in this case would indeed be cost-determined at OX. First, however, it is probable that the curve will be far from vertical. With the present presumption as to demand, elements (3) and (4) of l.r.m.c. (p.a.) are no longer relevant. There will be some divergence from s.r.m.c. (p.a.), in so far as the latter is not taken (by Mr. Wiles) to include the extra depreciation with fast running (element (2)). In the main, however, the marginal analysis of this case reduces to the orthodox result.

But in any case (second) the present analysis is irrelevant to the conflict between the marginal and normal-cost theories. This is because the latter has not been concerned with the case in view. The normal-cost theory relates to manufacturing industry; and it argues that, while the situation discussed is typical of the demand conditions of the firm (or rather farm) supplying primary

[1] See his Fig. 3, *op. cit.*, p. 523.

products to a central market, it is not typical of the firm in manufacturing industry: the latter firm has *not* a random relation to the custom of the market.

At this stage it is necessary to advert more fully to the normal-cost viewpoint: we may then consider the second interpretation of the present demand assumption. The discussion may be related to a manufacturing industry, in which a dominant firm (however defined) exercises price leadership.[1] It is assumed that the different firms are similarly situated, and that there is no basis for preferring the product of any one to that of another, in terms of an individual manufacturer's own specification of his product, his personality and so on. Nevertheless, in the absence of a central marketing organisation for the product, and hence, of a *market* consensus of opinion as to quality, buyers will tend to become attached to particular sellers in terms of the confidence given by previous custom; and the sellers, on the other hand, will seek always to promote and retain this goodwill, since—again in the absence of a central marketing organisation—it provides the regular outlet for their produce which is the essential basis of their efficient and continuing business. In short, at the price set by the leader each of the manufacturers will be selling to a definite clientele—the regular customers of the business.[2]

Now it seems clear that Mr. Wiles, in his own analysis, quite consistently presupposes the phenomenon of "regular custom" for the individual firm.[3] The second interpretation of the present demand situation, then, is to imagine a case in which, while demand is open to the firm in excess of OX, nevertheless, in accordance with l.r.m.c. (p.a.), the firm has established, and continues to maintain, connections with only part (*i.e.*, OX) of the available custom. Then for so long as the plant remains unchanged, the rate of demand and supply is established at OX; and the equilibrium is seen as cost-determined.

But again there is no reconciliation. It is of the essence of the notion of goodwill, and a regular custom for the firm, that the process of acquiring it takes time; it is built up only gradually and with difficulty. The situation envisaged in the present interpretation then—that (at least) initially, the firm is faced with sales possibilities at the prevailing price in excess of OX—is contrary to the fundamental presumptions of the normal-cost

[1] Cf. Wiles, *op. cit.*, p. 521 (top).

[2] For a more complete analysis of the role of goodwill in the normal-cost theory, see my article cited above, *passim*.

[3] *Op. cit.*, pp. 521, 525.

analysis. And the difference is not merely conceptual; it involves a divergence in the results of analysis.

Thus, reverting to the situation where there is a "kink" to the demand at the volume of sales OD, but where $OD > OX$: according to the normal cost theory, the (short-run) output of the firm will be OD; it will produce, that is, up to the limits of the goodwill it commands at the price. (This will be true generally, *i.e.*, for $OD \lesseqgtr OX$.)

This will be so, because just as Mr. Wiles claims for the marginal theory, so in the normal-cost theory the firm is assumed to look to its long-run position. Now on the one hand (as we have argued), regular custom, in terms of goodwill, is the essential basis of efficient and continuing business; and if this custom is acquired only gradually, it is maintained and extended only by continued vigilance and conscious effort. It is a corollary of this view that a present opportunity for increased sales, if not appropriated now, will almost certainly be lost permanently to the firm. On the other hand, the normal-cost theory argues that the *expectation* of falling, or at least constant, long-run cost on the part of the individual entrepreneur is the general case throughout the manufacturing sector of the economy. The long-run cost function is essentially expectational; and inasmuch as the business man will not expect himself, or the management generally, to become less efficient just because the business grows, his expectation will be influenced only by the falling "technical" costs of production.[1] The expectation of falling costs may well, therefore, be almost universal throughout the manufacturing sector of industry; even if actual long-run cost is rising—*i.e.*, even if, when the new scale of output has been achieved a decline in managerial efficiency should in the event belie the expectation of the business man.

According to expectation, therefore, an increased output at the ruling price will mean higher net profits in the long run, *i.e.*, when fully readjusted to produce the increased output. In the short period, therefore, the firm will not fail to take up the available demand to the limit; that is, it will not take the risk of losing custom to some other firm(s), similarly placed,[2] by refusing to supply it now, when it has the capacity to produce OZ, or by

[1] On the distinction between the "managerial" and the "technical" costs of production, see Andrews, *op. cit.*, pp. 113–15, and for the falling tendency of the latter, pp. 115–23.

[2] *I.e.*, desirous of extending their share of the market, and with the prospect of falling long-run cost.

working overtime, even greater outputs. The short-period output of the firm, therefore, will be *OD*, demand-determined by the extent of the goodwill of the market the firm commands. (In the long run the firm having reorganised (extended) its plant, the equilibrium at this output will be of the form discussed in § 3.1.1.)

In concluding this section, the question should be raised of the sense in which the existing plant is " given " to the firm for the purposes of Mr. Wiles's analysis. There seem to be three possible interpretations: (1) the process of extending the present plant of the firm takes time, in fact the " long period " of traditional cost analysis; during that interval, then, the plant of the firm is given. (2) If beyond the present range of output, long-run marginal cost (in the traditional sense) is increasing, then at the existing price the present scale of production may be the most profitable. In the sense that the entrepreneur is therefore unwilling permanently to increase it, the present plant is both " given " and " fixed." This suggests a third group of cases. (3) If, *e.g.*, owing to financial limitations, the firm is unable to contemplate expansion for an indefinite period; or again, if the firm is exploiting some given natural source, the rate of supply of which is fixed by Nature, then the existing plant is not merely given now, but is (more or less) permanently fixed.

Now it is true that in cases (2) and (3) the factors schematised in the concept of l.r.m.c. (p.a.) are in fact operative; in such circumstances the entrepreneur would not be interested in *extending* his output, but he would be interested in *maintaining* his existing custom. But again there is no reconciliation with the general normal-cost theory; for these are special cases with which that theory has not been concerned.

There remains the first—and most probable—interpretation. Here the presumption is that long-run marginal cost is less than price for an increase in scale. With this interpretation, we may sum up the discussion as follows. If Mr. Wiles maintains the assumption that demand is open to the firm in excess of *OX* " in both s.r. and l.r.," then *pro tanto* there is a divergence in fundamental presupposition, and no basis for comparison. In these circumstances, moreover, the validity of his analysis of the divergence of l.r.m.c. (p.a.) from s.r.m.c. (p.a.) is problematical. If, on the other hand, the normal-cost viewpoint as to demand is granted—and the elements (1), (3) and (4) of l.r.m.c. (p.a.) would presuppose such a view—then the l.r.m.c. (p.a.) curve is inoperative in the determination of equilibrium, which is demand-

determined, both in stable conditions and in the event of an increase in demand beyond OX; in the latter case the more remote risks attached to the use of capacity normally held in reserve will undoubtedly be adjudged less than the imminent risks of losing the prospective additional demand.[1]

3.1.3. There remains the third presumption as to the nature of the demand for the firm's product (which is, after all, the general presumption of the marginal theory), namely, that it is of finite elasticity, the familiar downsloping curve of imperfect competition theory. Indeed, this is the sort of curve which Mr. Wiles draws in his Fig. 5 (*op. cit.*, p. 524), in terms of which "comforting and familiar diagram" (he asserts) "the whole thing can be quite rationally explained" (p. 526).

What can be "explained" is that, given the l.r.m.c. (p.a.) curve, ". . . quite large changes in demand, such as those shown in figure [5] . . ., make little difference to output" (pp. 524–5). The change exhibited is, in fact, a *fall* in demand by approximately one-half. But if the validity of Mr. Wiles's analysis is granted at all, then the figure may be regarded as illustrating the effect of an *increase* in demand from the second to the first situation; so that the short-run (or p.a.) effect of a doubling of demand is to "make little difference to output," while price rises by some 43%!

That is sufficient to establish our point, that the normal-cost and marginal analyses cannot be so simply reconciled as Mr. Wiles has suggested. The former is concerned to develop a general theory, applicable to the ordinary run of manufacturing industries. It argues that for the individual manufacturer in such an industry the concept of a stable, downsloping demand curve for his product is entirely inappropriate. That, however, is not the point at present at issue. The question at the moment is one of the *results* of analysis, not of the *tools* of analysis; it is true, presumably, that if the same answers to a particular problem are arrived at by two different analytical approaches, then to that extent the two analyses are reconcilable.

It is just in this sense indeed that Mr. Wiles argues to his reconciliation in the present case. He believes (mistakenly) that ". . . empirical research into cost data and price fixing shows no difference between firms faced with such demand curves [perfectly

[1] What in effect is true in this latter case is that l.r.m.c. (p.a.) is *negative*; that is to say, since goodwill is valuable and may be added to by taking up the present increase in demand, the use of the reserve capacity to do this involves an expected *increase* in the value of the business. With "true" marginal cost falling in this way, the demand limitation is the effective determinant of short-period output.

elastic] and others. Both classes produce at the optimum point X . . ., and the elasticity of demand, though relevant to the setting of the price, is not considered relevant to the choice of X as the best possible output" (p. 521). This result, too, he evidently considers explicable by the full-cost theory, as far as it goes. The contradiction is then resolved by the formulation of the l.r.m.c. (p.a.) concept, which "explains" the choice of the output OX in marginal terms.

By the same token, the divergence between the normal-cost and the marginal analyses is increased. According to the former, the short-run effect of a normal increase in demand [1] is an increase in output *pari passu*, supplied at an unchanged price notwithstanding an associated increase in costs. (In the long run the increase in demand will, in general, be supplied at a lower price, as the businesses reorganise to supply the greater volume of output.) The result in fact is diametrically opposite to that predicated in terms of Mr. Wiles's marginal analysis; so that again there is no reconciliation.

H. R. EDWARDS

Nuffield College,
Oxford.

HOME AND EXPORT TRADE: A NOTE [2]

PROFESSOR R. F. KAHN'S article in the June 1951 issue of the ECONOMIC JOURNAL, entitled "Home and Export Trade," raises a number of interesting and important problems. A good deal more could be said about most of these problems. This note, however, is confined to some comments on Professor Kahn's analysis of the effect of purchase tax upon export prices.

Professor Kahn argues that the probable effect of the imposition of a purchase tax on a product sold in both the home and the export market would be to lower its export price, viz.:

> "We are entitled to discuss the case in which the firm earns as much as it can. A decline in the domestic demand for its product would mean that it was profitable to make up on export part, or all, of the trade lost at home, and the export price would be lowered rather than raised (in the limiting case of a firm with surplus capacity producing under conditions of constant prime cost there would be no effect on the export price or on the amount exported)." *Op. cit.*, p. 280.

[1] *I.e.*, a structural shift in consumers' preferences, not a cyclical revival of (aggregate) demand.

[2] I wish to acknowledge my grateful thanks to Mr. H. G. Johnson for very helpful criticism and advice on several points connected with this article.

This argument, clearly, is based on the conventional theory of price discrimination, the classic presentation of which is contained in Chapter 15 of Mrs. Joan Robinson's *Economics of Imperfect Competition*. And, provided the assumptions underlying Mrs. Robinson's analysis hold good, the conclusion that a restriction of demand in the home market will result in a fall in the price charged in the export market seems perfectly reasonable.

But there are good reasons to believe that these assumptions, or some of them at least, do not in fact hold good in this particular case. Professor Kahn's argument depends, essentially, on the assumption that the marginal cost of production rises as the firm expands its output, an assumption which under present economic conditions seems, at first sight, to be very probably correct. The important point to realise, however, is that it is correct only in so far as the *total* output of the firm is concerned. If the firm produces more than one product—and in the real world this seems to be the usual practice—then the assumption of increasing marginal costs may no longer be correct. For, in the case of the multi-product firm, although it may be true that the firm can only produce increasing amounts of all its products at increasing marginal cost, nevertheless, it may very well be true that it can produce more of any one product at decreasing marginal cost.

In order to show why this may be so, we shall make the following assumptions: that the total productive capacity of the firm (defined as the total quantity of fixed factors at its disposal) cannot be changed; that the productive capacity of the firm can be switched from the production of good A to the production of good B and vice versa; and that the firm distributes its productive capacity between A and B so as to maximise profits.

Now, since the firm cannot alter the total size of its productive capacity, it cannot increase the production of both A and B without encountering increasing costs. But, since its fixed factors can be switched from the production of one good to the production of the other, it may be possible for the firm to increase its output of A (or B) without encountering increasing costs if it is prepared to sacrifice part of its output of B (or A). The switching of the fixed factors which such a sacrifice will involve will change the scale on which the two goods are produced.

The fact that both A and B, considered separately, are subject to increasing returns in production is quite consistent with the firm continuing to produce some of each good, since the decreasing marginal cost may be offset by decreasing marginal revenue from producing more of one good by producing less of the other. This

decreasing marginal revenue from producing more of one good at the expense of the other may be due to imperfect competition in either or both markets; for example, the firm may have a perfectly elastic demand for A in its home market and yet continue to produce some of B because the increasing profit to be made from selling more A at a given price and falling marginal cost on the home market may be offset by the increasing loss of revenue from selling less of B at a rising marginal revenue on the foreign market.

Under these circumstances, putting a purchase tax on one of the goods produced by the firm will, since it reduces the total demand for the product, involve the firm in producing the good at a higher marginal cost; in other words, the price of the taxed product in both markets will rise.

This conclusion is, of course, contrary to that arrived at by Professor Kahn. The choice between the two depends on which model, the single-produce firm or the multi-product firm, one considers to be the more relevant. Since the purchase tax is levied on consumer goods, and since the normal variety of such goods has been increased by utility production schemes, it is argued that for this problem the multi-product firm is the more relevant model to adopt.

It should, perhaps, be added that the above argument implies a transfer of productive resources from the "industry" being subjected to purchase tax. Professor Kahn does refer to the possibility of such a transfer; but he thinks of it in terms of the complete closing-down of firms. Since actual cases of firms closing-down because of purchase tax cannot be found (until very recently at least), the possibility is mentioned but dismissed. Once one takes the case of a multi-product firm, however, then the question of transferring productive resources becomes the main one to be considered.

J. A. P. TREASURE

Gonville and Caius College,
Cambridge.

A KEYNESIAN AMBIGUITY?

I FIND myself in complete agreement with Mr. Harry G. Johnson when he says, in the last issue of this JOURNAL, that it is unwise and unnecessary to define "saving as the accumulation of idle balances, and investment as the running down of idle

balances." But I have not, as he suggests, been "misled by a fundamental ambiguity in the Keynesian definition of saving." I intended no such assumption about saving and investment, nor do I think that anyone familiar with the Keynesian literature would get that impression from my paper on the matrix multiplier. At worst I have been elliptic, in the belief that general agreement could be taken for granted on this question, just as one does not go through a limit process every time one takes a derivative.

I remain an unrepentant believer in this particular Keynesian ambiguity, holding it to be an unobjectionable use of Occam's razor. We may quite legitimately abstract from the treacherous institutional complexities of the capital market, since we do not aim to explain the rate of investment but only the consequences of any given and variable rate. Thus if a shortage of funds, from either internal or external sources, forces a reduction in the rate of investment, this situation in no way contradicts multiplier theory, though it may underline its incompleteness. To construct a wider system which explains the rate of investment, the rate of interest, etc., we must specify more explicitly the capital market, including the banks. But surely Keynes knew this perfectly well, and, in fact, made outstanding contributions to the analysis of the special behaviour of the capital market.

R. M. GOODWIN

OBITUARY

M. J. ELSAS
1881-1952

M. J. ELSAS, Doctor of Political Science (Staatswissenshaft), Frankfurt a/M, was born at Frankfurt, December 25, 1881. He first became known as a contributor to the *Frankfurter Zeitung*, and was invited to collaborate in the Reconstruction Supplements of the *Manchester Guardian*, edited by J. M. Keynes. At that time he was also publishing a weekly index of the cost of living in Frankfurt on original lines, which attracted great attention.

At the initiation of the London and Cambridge Economic Service Elsas became German correspondent and contributed regularly till 1939. As a member of the International Committee on the History of Prices he compiled two monumental volumes *Umriss Einer Geschichte der Preise und Lohne in Deutschland vom Ausgehenden der Mittelalter biszum Beginn der Neunzenten*

Jahrhunderts. In 1941–42 Elsas worked under my advice on the definitions of National Income used in different countries, and his analysis was published as Chapter I in *Studies in the National Income.*

Already attached to England, where he married, he made his home in Hampstead when Hitler was rising to power. In recent years he published articles and two books on housing problems, dealing in particular with the probable future needs of families of different sizes. He was elected a Fellow of the Royal Statistical Society in 1922 and of the Royal Economic Society in 1932.

In his work he showed qualities of a scholarly and painstaking researcher in a wide field of statistics.

He died at Hampstead on April 18, 1952.

A. L. BOWLEY

Haslemere.

CURRENT TOPICS

THE death of Sir Hubert Henderson, recorded in our last issue, created, to our deep regret, a vacancy in the office of President. The Council, using its powers under Article 13 of the Bye-Laws, elected Lord Brand to the Presidency *ad-interim*, to hold office until the next Annual General Meeting.

THE Annual General Meeting of the Royal Economic Society was held at the London School of Economics on Thursday, July 3, 1952. Lord Brand was elected to the office of President. With this exception, the Officers and Council were re-elected without change for 1952–53. The official business was followed by a most interesting discussion of " The Government's Monetary Policy." After a brief introduction by Lord Brand, Mr. A. H. Ensor, chief General Manager of Lloyds Bank, opened from the point of view of a practical banker. He was followed by Mr. P. Horsfall and Sir Maurice Hutton from the point of view of industry and trade.

THE Secretary reported on the membership and finances of the Society as follows :

	1951.	1950.	1939.	1914.
New Fellows and Library Members elected	595	638	490	50
Fellows lost by death, resignation, or default	414	439	496	33
Number of Fellows and Library Members on December 31 . .	5,937	5,756	4,572	694
Total Compounders in above total .	2,055	2,008	1,155	159
Surplus of Income over Expenditure, together with receipts from Compounders	£1,430	£1,670	£329	£278

Houblon-Norman Fund. The Trustees of the Houblon-Norman Fund, on the recommendation of their Advisory Committee, have made the following awards for 1952–53 :

Fellowship.

Mr. E. W. J. Kerridge, Assistant Lecturer, University of Nottingham.	The History of Ley Farming, particularly in Midland England, in the Sixteenth, Seventeenth and Eighteenth Centuries.

Research Grants.

Mr. A. Birch, Research Student, University of Manchester.	The Economic History of the British Iron and Steel Industry, 1784–1879.
Mr. D. J. Darby, Bank Official.	The London Banks in the Bank Restriction Period.
Mr. R. J. Hartridge, Teacher, South London Secondary Central School.	The Development of Industry in London South of the Thames from 1700 to 1850.
Dr. G. P. Insh, C.B.E., D.Litt., Historian.	The Financial Activities of William Paterson.
Mr. J. Johnston, Lecturer, University College, Bangor.	Cost–Output Relationships in a Sample of Firms from Different Industries.
Mr. J. Lanner, Lecturer, University College, London (renewal).	Banking in Post-War Germany.
Mr. E. C. Parsons, Civil Servant.	Mobility of Labour and the Distribution of Industry.
Mr. F. M. L. Thompson, Assistant Lecturer, University College, London.	The Social and Economic Background of the English Landed Interest, 1840–70.
Mr. S. Wainwright, Financial Journalist.	Twentieth-century Development of Swiss Financial Institutions.

An offer of awards for 1953–54 will be made early in 1953. Further information may be obtained from the Secretary, Houblon-Norman Fund, c/o Bank of England, London, E.C.2.

THE following have compounded for life membership of the Royal Economic Society :—

Campbell, A. D.	Sharma, B. N.	Spanjer, D. B.
Hamberg, D.	Sotiroff, G.	Walls, D. F.

Library Compositions for fifteen years' subscriptions :—

Abo Academy Library.
City Library, Exeter.
Smith College, Northampton, U.S.A.
University of Western Australia, Perth.

The following have been elected to membership of the Royal Economic Society :—

Adams, S. G.	Chiang, K. T.	Hart, P. E.
Agrawal, G.	Cho, K. H.	Hawker, R. J.
Aitkins, T. A. D.	Christie, J. A.	Haworth, T. P.
Ajose-Adeogun, A.	Chua, P. S.	Hayward, E.
Alade, F. M.	Clarke, S. S. A.	Heng, F.
Alayza, Dr. E.	Coleman, C. J.	Heath, A. D.
Arya, O. P.	Coombes, W. J.	Hodges, D. J.
Avery, D. J.	Coulthard, T. H.	Holme, Miss M.
Ayoola, E. O.	Couvelis, P.	Hudson, H. R.
Badley, P. A. M.	Dehem, R.	Jansz, M. D.
Bai, K. S. G.	Deudney, R. C.	Jarrett, G.
Bailey-Willmot, H. J.	Doubleday, E. G.	Jean-Michel, M.
Barnes, H. M. F.	Drager, W.	Kafer, R.
Barnes, J. M.	Edozien, O. G.	Kaplan, M.
Bau, S. P.	Ene, I. A.	Keat, C. E.
Beaumont-Dark, A. M.	Fernando, G.	Khiam, Y. E.
	Fong, F. C. T.	Kim, E. Yew.
Berry, D.	Ford, A. G.	Lanes, A. R.
Bisson, E. J.	Francis, H. C.	Lau, D. W.
Bokare, M. G.	Fraser, Miss S. B.	Lim, S. L.
Booth, N.	Fuz, Dr. J. K.	Low, Miss S. H.
Brake, L. F.	Garrud, H. W. F.	McAuley, D. F. J.
Brems, H.	Gillanders, F.	Main, P. C.
Brodrick, J.	Goh, K. B.	Mason, P. A. J.
Burton, R. N.	Goodsell, J. W.	Melville, L. G.
Byrne, P. J.	Gordon, Prof. R. A.	Merton, J.
Cavanna, P. J.	Gorman, W. M.	Mow, L. S.
Cheriyan, T. J.	Griffin, J.	Muzaffar, S. U.
Cheung, H. C.	Harberger, Prof. A. C.	Nadkarni, G. D. A.

Nair, C. V.
Neo, K. S.
Ng, C. G.
Nichol, W.
Nichols, J.
O'Mahony, J. E.
Ong, H. C.
Pandya, R. R.
Patil, B. A.
Pfeffer, I.
Phillips, R. J.
Raman, E. Kothanda.
Rawcliffe, D. H.
Reynolds, A. B.
Rose, B. G.
Saksena, Prof. S. C.
Schwartz, M.
Scott, A. D.
Scott, J. A.
Searle, F. R. A.
Singh, S. P.
Smith, N. H.
Song, H.
Spinks, G. R.
Spurway, E. J.
Stayt, J. R.
Sundram, M.
Talwar, O.
Tan, H. S.
Teck, K. E.
Teo, K. L. J.
Teoh, H. E.
Thomas, A. St. G.
Verma, L. S.
Waddell, R. R.
Wallis, D. F.
Watkins, J. A.
Wiggins, L. M.
Woodstack, Miss G. A.
Yeo, T. K.

The following have been admitted to Library membership of the Royal Economic Society :—

Baroda Faculty of Commerce.
George A. Bunting Library, Washington College.
Faculdade de Filosofia, Brazil.
Pembroke College, Oxford.

Association of University Teachers of Economics. The next annual conference of the Association will be held at Cambridge from 2nd to 5th January, 1953. Accommodation will be provided at Gonville and Caius College by the kind permission of the College Council. Fuller details will be circulated to members later. Full membership of the Association is open to any person holding a full-time appointment in a British or Irish University who is primarily engaged in the internal University teaching of economics or closely allied subjects. Enquiries regarding membership should be addressed to the Honorary Secretary, H. C. Edey, London School of Economics and Political Science, Houghton Street, W.C.2.

RECENT PERIODICALS AND NEW BOOKS

Journal of the Royal Statistical Society

VOL. CXV, PART I, 1952. *The Econometrics of Family Budgets:* H. S. HOUTHAKKER. *The Interdependence of the British Economy:* T. BARNA. *Index Numbers of the Real Product of the United Kingdom:* C. F. CARTER. *The Teaching of Statistics in Schools.*

Applied Statistics

VOL. I, NO. 1, MARCH 1952. The first issue of a new journal, published for the Royal Statistical Society by Oliver and Boyd, 98 Great Russell St., London, W.C. *The Introduction of Statistical Methods to Industry:* B. P. DUDDING. *A Statistician Looks at the International Management Congress of 1951:* A. W. SWAN. *Estimating the Social Class of Towns:* L. T. WILKINS. *A Use for the Jury Qualification in Sample Design:* T. CORLETT. *A Statistical Approach to the Specification of Plastics:* C. WAINWRIGHT. *Uses and Abuses of Factor Analysis:* H. J. EYSENCK. *The Accuracy of Systematic Sampling from Conveyor Belts:* G. H. JOWETT.

VOL. I, NO. 2, JUNE 1952. *Estimating the Future Population:* P. R. COX. *A Collaborative Investigation into Methods of Chemical Analysis of Ground Pyrethrum Flowers:* G. V. DYKE and E. R. SIMPSON. *Index Numbers of Retail Prices 1938–51:* R. G. D. ALLEN. *Calibration of an Integrating Gas Flowmeter:* W. SPENDLEY. *The Measurement of Branch Sales Performance:* B. T. RAMM. *One Line or Two?:* W. N. JESSOP.

Economica

VOL. XIX, NO. 74, MAY 1952. *Marshall's Principles of Economics in the Light of Contemporary Economic Thought:* C. W. GUILLEBAUD. *The Effects of Income-Redistribution on Aggregate Consumption with Interdependence of Consumers' Preferences:* HARRY G. JOHNSON. *The Economist's Description of Business Behaviour:* G. F. THIRLBY. *The Inequality of Incomes in the United Kingdom:* E. C. RHODES. *Unemployment in Belgium and Full Employment Policy:* W. ROBERTSON. *Cost Curves for Electricity Generation:* K. S. LOMAX.

The Economic History Review

VOL. 4, NO. 3, 1952. *Joint-Stock Investment in the Later Seventeenth Century:* K. G. DAVIES. *The Iron Industry at the End of the Charcoal Era:* B. L. C. JOHNSON. *Beginnings of British Investment in Argentina:* H. S. FERNS. *David Ricardo:* S. G. CHECKLAND. *A Bibliography of Works on Scottish Economic History Published during the Last Twenty Years:* W. H. MARWICK.

The Manchester School of Economic and Social Studies

VOL. 20, NO. 2, MAY 1952. *World Production Prices and Trade, 1870–1960:* W. A. LEWIS. *Costs of Distribution in Department Stores:* L. COHEN *John Koster, Anti-Bullionist:* S. G. CHECKLAND. *British and Foreign Immigrant Miners in Fife:* W. WATSON.

Yorkshire Bulletin

VOL. 4, NO. 1, JANUARY 1952. *An Investigation of Liquidity Preference:* A. M. KHUSRO. *The West Riding Wool Textile Industry and The Great Exhibition:* E. M. SIGSWORTH. *Occupations in Kingston upon Hull, 1841–1948:* JOYCE BELLAMY. *The Level of the Australian Tariff:* A. T. CARMODY. *Colonial Demand for Cotton Goods:* K. S. LOMAX.

Bulletin of the Oxford University Institute of Statistics

VOL. 13, NOS. 11–12, NOVEMBER–DECEMBER 1951. *Earnings in Shipbuilding:* K. G. J. C. KNOWLES and D. J. ROBERTSON. *A "Human Needs" Diet in November 1951:* T. SCHULZ. *A Note on Federal Reserve Policy:* T. BALOGH. *Personal Incomes in Oxford:* H. F. LYDALL.

VOL. 14, NO. 1, JANUARY 1952. *National Income—Third Quarter of 1951:* P. D. HENDERSON, D. G. HOLLAND and D. SEERS. *A "Rent, Dividends and Interest" Account for 1948:* J. R. SARGENT.

VOL. 14, NO. 2, FEBRUARY 1952. *Working-class Consumption from 1942 to 1949:* T. SCHULZ. *The National Income in 1951 and Future Prospects:* P. D. HENDERSON, D. G. HOLLAND and D. SEERS.

VOL. 14, NO. 3, MARCH 1952. *The Food Subsidies and the Budget:* C. R. ROSS. *Ten Years of Family Surveys:* T. SCHULZ. *Liquid Asset Holdings in Oxford:* H. F. LYDALL.

VOL. 14, NOS. 4–5, APRIL–MAY 1952. *The New Monetary Policy and the Problem of Credit Control:* H. G. JOHNSON. *Monetary Policy and the Crisis: Comments. I:* F. W. PAISH. *II:* R. F. KAHN. *III:* D. H. ROBERTSON. *IV:* J. R. HICKS. *V:* T. BALOGH. *VI:* R. F. HARROD. *Conclusion:* G. D. N. WORSWICK.

Soviet Studies

VOL. IV, NO. 1, JULY 1952. *Soviet Fuel and Power:* STEFAN LAMET. *A Critical Analysis of Some Concepts Concerning Soviet Agriculture:* I. M. FINEGOOD. *A Soviet Women's Magazine:* DOROTHEA L. MEEK. *The Kolkhoz System, a Rejoinder:* A. NOVE.

The Eugenics Review

VOL. 44, NO. 1, APRIL 1952. *"Eugenic" Experiments Conducted by the Nazis on Human Subjects:* C. P. BLACKER. *Recording Human Constitution:* R. W. PARNELL. *History in Your Blood:* J. A. FRASER ROBERTS. *The Eugenic Hypothesis:* F. OSBORN. *An International Union of Family Organizations:* R. BOUDET. *Galton's Hereditary Genius:* F. OSBORN.

Accounting Research

VOL. 3, NO. 2, APRIL 1952. *Solution of Funds Statement Problems:* ROBERT H. GREGORY and EDWARD L. WALLACE. *A Distinction between Profit and Income:* LOUIS GOLDBERG. *Profits of the Year:* HARRY NORRIS. *Theory of Cost and Cost Accounting:* G. D. DE SWARDT. *Accounting Research—An International Function:* A. A. GARRETT.

The Incorporated Statistician

VOL. III, NO. 1, FEBRUARY 1952. *Oxford Conference (1951)—Proceedings. "The Work of a Municipal Statistical Office":* ENID CHARLES. *"Electronic Digital Computers":* DR. BOWDEN. *Binary Arithmetic; a note:* R. L. MICHAELSON.

VOL. III, NO. 2, JUNE 1952. *The Use of Statistics in Advertising and Marketing:* JOHN RODGERS. *Business Forecasting:* FRANK A. FRIDAY. *The Limitations of Productivity Analysis:* A. R. SMITH.

Local Government Finance

VOL. LVI, NO. 3, MARCH 1952. *Form without Formula. Accounting as Metaphysics. Educational Building. The Box Office from the Accounting Point of View. Bankers Vindicated. Housing 1952. County Finance. The Snowy Mountains Hydro-Electric Authority.*

The Banker

VOL. XCVIII, NO. 316, MAY 1952. *A Banker's Diary. Can Monetary Policy Carry the Load? The Risk of American Slump. Sterling Still in Jeopardy. Aid from South Africa:* D. OVENS. *The Future of Raw Material Prices:* E. H. STERN. *Building Societies and Interest Rates:* O. R. HOBSON. *The New Pattern of Bank Salaries.*

VOL. XCVIII, NO. 317, JUNE 1952. *Should Sterling be Freed? Convertibility for a Floating Pound? The Domestic Implications. The International Complications. Disinflation in India:* GEOFFREY TYSON. *Scots Banks and Monetary Policy. Orthodoxy's Triumph in Holland. Banking in Soviet Russia.*

The Bankers' Magazine

APRIL 1952. *Equation of Resources. The Mechanisation of Branch Banks:* R. HINDLE. *John Law and Maynard Keynes:* F. S. TAYLOR. *Review of the Gilbart Lectures, 1952.*

MAY 1952. *Disjointed Policy. International Survey:* H. E. EVITT. *India: elections and after:* SIR JOHN THORNE. *Balance of Payments 1951–1952:* J. HUNSWORTH. *The Mechanisation of Branch Banks:* R. HINDLE.

Barclays Bank Review

VOL. XXVII, NO. 2, MAY 1952. *The Price of Economic Survival. Budgetary Policy and the Budget. The Economics of Education. Sulphur.*

District Bank Review

NO. 102, JUNE 1952. *Differences between Business and Public Administration:* D. N. CHESTER, C.B.E. *The Supply of Capital:* J. R. CUTHBERTSON. *How Much Recession?*

Westminster Bank Review

MAY 1952. *Inflation and Accounting Profits:* W. T. BAXTER. *Economic Policy and the Budget. Measuring Changes in the Value of Money. Plague in the City. Agricultural Property Market.*

National Provincial Bank Review

NO. 18, MAY 1952. *Must History Repeat Itself?:* SIR ALEXANDER CADOGAN. *The French Franc:* P. BAREAU. *Monetary and Commercial Agreements—1951.*

The Three Banks Review

NO. 14, JUNE 1952. *New Industries and Economic Development in Scotland:* A. K. CAIRNCROSS and R. L. MEIER. *The Radio and Television Industry a Post-War Survey:* JOHN H. DUNNING. *David Dale, Scots Banker, Benefactor and Industrialist 1739–1806.*

Planning

VOL. XVIII, NO. 340, MARCH 1952. *The World's Food.*

VOL. XVIII, NO. 341, APRIL 1952. *Film Business. Preview of a new PEP Report.*

VOL. XVIII, NO. 342, MAY 1952. *France—Some Economic Factors: Population Structure. Economic Structure. Inflation. The Balance of Payments.*

Town and Country Planning

VOL. XX, NO. 97, MAY 1952. *Sport and Town Planning:* J. P. W. MALLALIEU. *How to Make Regional Planning Effective:* P. SELF. *Housing in Greater Paris:* P. GRUNEBAUM-BALLIN. *Development Plans IV:* D. DONNELLY. *From a Woodman's Diary:* J. D. U. WARD. *The Twenty-Year Limit:* G. LAW. *The Housing Manager and Planning:* JEAN THOMPSON. *Green Pastures:* H. MACE.

VOL. XX, NO. 98, JUNE 1952. *Hydro-Electric Power:* A. R. COOPER. *Parliamentary Notes:* S. T. STEPHENS. *Georgian Bristol:* P. ABERCROMBIE. *Points in the London Plan:* D. L. MUNBY. *Students' Planning Group:* P. V. SELLERS. *Planning Progress in Canada:* B. MALKIN. *Development Plans V:* D. DONNELLY. *The Twenty-Year Limit: Food Production and the Townsmen:* A. C. RICHMOND.

VOL. XX, NO. 99, JULY 1952. *Big Business in Little Valleys:* CLOUGH WILLIAMS-ELLIS. *Concerning Le Corbusier:* F. J. OSBORN. *Trees in Towns:* RONALD MORLING. *Development Plans VI:* DESMOND DONNELLY. *Slab Architecture:* L. G. PEARSON. *Town Planning in Peru and Brazil:* JOHN BROWN.

Progress (*Lever Bros.*)

VOL. 42, NO. 234, SPRING 1952. *Men Against Disease:* R. CALDER. *Trusts and Foundations in the New Social Order:* SIR HECTOR HETHERINGTON. *Progress in Colour Printing:* F. T. COLLEY. *Accountants in Industry:* J. F. KNIGHT. *Education and Manpower:* S. ZUCKERMAN. *The Capable Kitchenmaids:* B. HOLLOWOOD. *The Significance of Pension Funds; some economic aspects:* SIR HENRY CLAY. *New Standards in Industrial Architecture:* J. M. RICHARDS.

Hard Fibres

No. 1, JUNE 1951. The first issue of a new journal published by the Sisal Growers' Association, Room 101, Grand Buildings, Trafalgar Square, London, W.C.2. *Short-term Trends. World Situation. Abaca in the Philippines.*

No. 2, SEPTEMBER 1951. *World Situation. Central American Abaca Scheme.*

No. 3, DECEMBER 1951. *Pattern of World Supplies. World Situation. Background to Mexican Henequen.*

No. 4, MARCH 1952. *World Fibre Position—Forecast for 1952. Prospects for 1952. Recovery in Indonesia.*

The Political Quarterly

VOL. 23, NO. 3, APRIL–JUNE 1952. *Labour Foreign Policy:* ERNEST DAVIES, M.P. *Comprehensive Schools:* C. D. RACKHAM. *The Comprehensive School:* HELEN C. BENTWICH. *Labour and the Planning Organisation:* R. S. MILNE. *Public Planning and Private Industry:* T. E. M. MCKITTERICK. *Recent Trends and Strategies in Soviet Federalism:* PROFESSOR JULIAN TOWSTER. *The Incidence of Election Expenses:* J. F. S. ROSS. *The German Military Mind:* PETER DE MENDELSSOHN.

The South African Journal of Economics

VOL. 20, NO. 1, MARCH 1952. *Industrial Relations in South Africa* (*review article*): G. ROUTH. *Reflections Upon the Present State of National Income Determination:* O. P. F. HORWOOD. *The Textile Industry in the Union of South Africa:* F. J. C. CRONJE. *Transportation in the American Economy* (*review article*): J. C. LAIGHT. *Inflasie:* H. W. J. WIJNHOLDS. *The Nature of Money:* W. H. HUTT. *The Future of the Gold Mining Industry:* H. OPPENHEIMER.

Indian Economic Review

VOL. I, NO. 1, FEBRUARY 1952. The first issue of a new journal published from the Delhi School of Economics. *The Problem of Marginal Cost Pricing Reconsidered:* MAURICE DOBB. *Pre-conditions of Economic Development:* D. R. GADGIL. *Principles of Protection in the Context of Under-developed Countries:* B. N. GANGULI. *Risk of Investment in Corporate Ventures in India:* B. R. KISHORE. *Investment, Income, and the Multiplier in an Under-developed Economy:* V. K. R. V. RAO.

Tata Quarterly

VOL. VII, NO. 1, JANUARY 1952. *Recent Economic Policy. Economic and Financial Review, October–December 1951.*

International Labour Review

VOL. LXV, NO. 4, APRIL 1952. *Tribal Society and Labour Legislation:* P. CHARLES. *Merit-Rating Incentive Schemes:* A. F. STEWART. *Implications of Rent Control:* L. GREBLER. *Co-operation in the Non-Self Governing Territories.*

VOL. LXV, NO. 5, MAY 1952. *Social Progress and the Organisation of Social Research:* ROGER GIROD. *Human Relations in Industry:* E. DAYA. *Input–Output Analysis as an Aid to Manpower Policy:* JAMES BURTLE. *Social Policy in Non-Metropolitan Territories.*

VOL. LXV, No. 6, JUNE 1952. *Industrial Relations in the British Shipping Industry :* L. H. POWELL. *Underemployment in Asia :* CHIANG HSIEH. *The Cost of Social Security.*

Cartel

No. 4, APRIL 1952. *Sweden Proposes New Anti-monopoly Law :* THORSTEN ODHE. *Aluminium Precious Metal :* RICHARD EVELY. *Industrial Agreements and the French Farmer :* EDOUARD KLEPPING.

Economic Bulletin for Europe

VOL. 4, No. 1, FOURTH QUARTER 1951. *Review of the Economic Situation in Europe in the Fourth Quarter of 1951 and the First Months of 1952. Housing in Europe since the War. Corrigendum to the Economic Survey of Europe in 1951. European Economic Statistics.*

Population Bulletin

No. 1, DECEMBER 1951. This is the first issue of this new periodical, published by the Population Division of the Department of Social Affairs of the United Nations, New York. *The Past and Future Growth of World Population—a Long-Range View. International Migration in the Far East during Recent Times—the Countries of Emigration. Dynamics of Age Structure in a Population with Initially High Fertility and Mortality :* F. LORIMER. *Some Quantitative Aspects of the Ageing of Western Populations.*

Statistical Papers Series T
(Joint Publication of U.N., I.M.F. and I.B.R.D.)

VOL. III, No. 1, JANUARY 1952. *Direction of International Trade.*

International Financial Statistics

VOL. V, No. 5, MAY 1952. *Changes in Money Supply. New Country Page : Burma. New Balance of Payments Statements.*

International Monetary Fund Staff Papers

VOL. II, No. 2, APRIL 1952. *Present Foreign Payments Practices in the United States :* ALFRED H. VON KLEMPERER. *Recent Developments in the U.S. Balance of Payments :* H. K. ZASSENHAUS and F. C. DIRKS. *Effects of a Devaluation on a Trade Balance :* SIDNEY S. ALEXANDER. *Employment, Production and the National Security Program in the United States :* TA-CHUNG LIU. *The Modern Colonial Sterling Exchange Standard :* H. A. SHANNON.

The Quarterly Journal of Economics

VOL. LXVI, No. 2, MAY 1952. *A Close-up of the Soviet Fourth Five-year Plan :* N. JASNY. *The Essential Properties of Interest and Money :* A. P. LERNER. *Program Patterns and Preferences and the Workability of Competition in Radio Broadcasting :* P. O. STEINER. *Profit Standards :* J. F. WESTON and N. H. JACOBY. *Real and Monetary Factors in the Determination of Employment Levels :* V. LUTZ. *Guideposts for Reciprocal Trade Policy :* I. B. KRAVIS.

The American Economic Review

VOL. XLII, No. 1, MARCH 1952. *An Economist's Confessions :* J. H. WILLIAMS. *A General Theory of Bargaining :* J. PEN. *Underemployment Equilibrium Rates of Growth :* R. EISNER. *A Theory of the System of Multilateral Trade :* K. E. HANSSON. *Cyclical Changes in the Balance of Trade :* S. G. TRIANTIS. *The Stability of State and Local Tax Yields :* H. M. GROVES and C. H. KAHN. *Domestic Air Line Self-Sufficiency :* H. D. KOONTZ. *Cost of Production, Price Control and Subsidies :* H. G. BROWN.

VOL. XLII, No. 2, MAY 1952. *Papers and Proceedings of the Sixty-fourth Annual Meeting of the American Economic Association. Boston, Massachusetts, December 26–29, 1952.*

The Journal of Political Economy

VOL. LX, NO. 2, APRIL 1952. *Income and Leisure in an Underdeveloped Economy:* S. ROTTENBERG. *A Proposed Revision of Excise-tax Theory:* E. R. ROLPH. *Antitrust Law and the Big Buyer; another look at the A. and P. Case:* J. B. DIRLAM and A. E. KAHN. *Investment Alternatives in Soviet Economic Theory:* N. KAPLAN. *Information, Theories of Competition and the Theory of Games:* M. SHUBIK. *The Utility of Wealth:* H. MARKOWITZ.

VOL. LX, NO. 3, JUNE 1952. *The Ricardian Theory of Value and Distribution:* G. J. STIGLER. *Federal Grants and Resource Allocation:* J. M. BUCHANAN. *Intelligence and Occupational Mobility:* C. A. ANDERSON, J. C. BROWN and M. J. BOWMAN. *The Pigou Effect Once More:* G. HABERLER. *Professor Metzler and the Rate of Interest:* D. MCCORD WRIGHT. *Perspectives on Monopoly: A Reply:* G. W. STOCKING and M. W. WATKINS. *A Reply:* L. A. METZLER. *A Rejoinder:* N. H. JACOBY.

The Annals of the American Academy of Political and Social Science

VOL. 280, MARCH 1952. *Ethical Standards in American Public Life.*

VOL. 281, MAY 1952. *Economic Analysis of Land Use on the Western Ranges:* M. M. KELSO.

The Review of Economics and Statistics

VOL. XXXIV, NO. 1, FEBRUARY 1952. *Some Basic Problems of Structural Analysis:* W. LEONTIEF. *The Pricing Effects of Accelerated Amortization:* J. P. MILLER. *Postwar Consumption Functions:* M. COHEN. *The Theory of Union Wage Policy:* M. W. REDER. *A Simple Econometric Model for the United States, 1947–1950:* G. H. FISHER. *The Cowles Commission's "Simultaneous Equation Approach"; a simplified explanation:* E. G. BENNION. *The Relationship Between Machinery and Steel Production in Russia and the United States:* S. KASDAN. *Foreign Investments of American Corporations:* R. C. EPSTEIN. *Has Bank Supervision Been in Conflict with Monetary Policy?:* C. WARBURTON. *On the Reliability of Soviet Statistics:* L. TURGEON. *A Note on Professor Frisch's Trade Matrix and Discriminatory Restriction of Imports:* A. Y. C. KOO. *An Application of the Durand Method for Estimating the Size Distribution of a Given Aggregate Income:* R. G. TOWNSEND. *Statistical Concepts in the Soviet Union Examined from Generally Accepted Scientific Viewpoints:* S. A. RICE.

Econometrica

VOL. 20, NO. 2, APRIL 1952. *Blending Aviation Gasolines; a study in programming interdependent activities in an integrated oil company:* A. CHARNES, W. W. COOPER and B. MELLON. *Optimality and Degeneracy in Linear Programming:* A. CHARNES. *Irreversible Demand Functions:* M. J. FARRELL. *The Inventory Problem—I. Case of Known Distributions of Demand:* A. DVORETZKY, J. KIEFER and J. WOLFOWITZ. *Consumer's Behaviour and Liquidity Preference:* M. MORISHIMA. *On the Application of Servomechanism Theory in the Study of Production Control:* H. A. SIMON. *The Method of Equivalent Linearization:* F. E. BOTHWELL. *A Business Cycle Model with Organized Labor Considered:* M. SHUBIK. *Definite and Semidefinite Quadratic Forms:* G. DEBREU. *Note on Consolidation Within a Leontief System:* M. HATANAKA. *On a Relation Between Changes in Demand and Price Changes:* A. WALD.

The Journal of the American Statistical Association

VOL. 47, NO. 257, MARCH 1952. *Man as a Planning Animal:* LOWELL J. REED. *Some Applications of Statistics for Auditing:* JOHN NETER. *Fertility Trends and Differentials in the United States:* CLYDE V. KISER. *Estimation for Sub-Sampling Designs Employing the County as a Primary Sampling Unit:* EMIL H. JEBE. *Latent Structure Analysis and Its Relation to Factor Analysis:* BERT F. GREEN, JR. *Measuring Magnitudes and Trends in the Production of Livestock and Meat:* A. V. NORDQUIST.

Public Finance

VOL. VI, NO. 4, 1951.—*Current Trends in Public Budgeting in the United States :* CATHERYN SECKLER-HUDSON. *A further Report :* U. K. HICKS. *The Budget Cycle in Public Finance in the United States of America :* O. BAKKER. *A Concept of Optimum Budget :* BALJIT SINGH. *The Sales Tax as an Anti-inflationary Measure :* J. F. DUE.

The Journal of Economic History

VOL. 12, NO. 2, SPRING 1952. *British Mercantilism and the Economic Development of the Thirteen Colonies :* C. P. NETTELS. *National Income Estimates for the United States Prior to 1870 :* S. KUZNETS. *The "Historical" Character of Economic Theories :* A. SPIETHOFF.

Social Research

VOL. 19, NO. 1, MARCH 1952. *United States Defense in Europe :* ARNOLD BRECHT. *The Origin of the Idea of Natural Right :* LEO STRAUSS. *Labor Unrest in the British Nationalized Sector :* ROBERT L. HEILBRONER. *Nature, History and Existentialism :* KARL LOWITH. *What, No Nightingales ? :* GERARD W. SPEYER. *Hermann Broch (1886–1951) :* ERICH KAHLER.

Review of Social Economy

VOL. X, NO. 1, MARCH 1952. *Problem of a Defense Economy ; pressure groups vs. social justice :* J. C. O'MAHONEY. *The Application of Economic Science ; norms and value judgments :* J. H. SHEEHAN. *Economic Research and the Social Encyclicals ; progress and poverty :* J. F. CRONIN. *The Peschian Value Paradox ; a key to the function of vocational groups :* R. E. MULCAHY. *Neo-Malthusianism in Puerto Rico :* M. C. TAYLOR.

Foreign Affairs

VOL. 30, NO. 3, APRIL 1952. *Korea in Perspective :* ADLAI E. STEVENSON. *The Chimera of German Neutrality :* ERICH DETHLEFFSEN. *"Socialist Competition" :* ISAAC DEUTSCHER. *Argentina in the Tunnel. The World Bank at Work :* EUGENE R. BLACK. *India, Do's and Don'ts for Americans :* M. R. MASANI. *Communist Dogma and Jugoslav Practice :* M. S. HANDLER. *The Threat of the Soviet Navy :* FRANK UHLIG, JR. *The Dilemma of British Labor :* R. V. SAMPSON. *The Soviet Conquest of Rumania :* BARRY BRANNEN.

Harvard Business Review

VOL. XXX, NO. 2, MARCH–APRIL 1952. *Reaching out in Management :* WILLIAM B. GIVEN, JR. *Wage Stabilization from Labor's Viewpoint :* SID LENS. *A Story of Executive Relationships :* JOHN PERRY and ROBERT WARE STRAUS. *Economic Incentives and Human Relations :* WILLIAM FOOTE WHYTE. *Effective Management in Small Business :* HARRY S. FREEDMAN. *A Business Forecast 1952–1955 :* FRANK D. NEWBURY. *Needed ; A Marketing Preparedness Program :* RUSSEL H. COLLEY. *The Corporation Law Department :* CHARLES S. MADDOCK.

VOL. XXX, NO. 3, MAY–JUNE 1952. *Religious Foundations of Economic Progress :* KENNETH E. BOULDING. *The Future of Television :* MILLARD C. FAUGHT. *Inflation and Accounting :* THOMAS H. SANDERS. *Company Presidents Look at Themselves :* J. ELLIOT JANNEY. *The Unpaid Local Leader :* GEORGE STRAUSS and LEONARD R. SAYLES. *No Standard : A Case Study in Pricing :* HARRY L. HANSEN and POWE[illegible] NILAND.

Journal of Farm Economics

VOL. 34, NO. 2, MAY 1952. *Changes in Scale in Commercial Farming and Their Implications :* KENNETH L. BACHMAN. *Social Scientists and Agricultural Policy :* WALTER W. WILCOX. *American Agricultural Policy During Rearmament :* KARL BRANDT. *Appraising the Demand for American Agricultural Output During Rearmament :* E. J. WORKING. *Farmer-Debtor Relief Legislation :* ERNEST FEDER. *The Use of Commodity Exchanges by the Iowa Grain Industry :* C. D. CHRISTENSEN.

Land Economics

VOL. 28, NO. 1, FEBRUARY 1952. *Problems of Land Tenure in Contemporary Africa:* MELVILLE J. HERSKOVITS. *Possibilities of Co-operative Farming:* SARDAR M. AKHTAR. *Population Growth and Economic Development:* HOPE T. ELDRIDGE. *Equitable Tenancy Arrangements in Progressive Agriculture:* JOHN STUART HILL. *The Planning Process in Urban Redevelopment:* IRA S. ROBBINS. *Social Welfare and Land Tenure in the Agrarian Reform Program of Venezuela:* GEORGE W. HILL, GREGORIO BELTRAN and CHRISTINO MARINO.

Economic Geography

VOL. 28, NO. 2, APRIL 1952. *The Definition of Standard Metropolitan Areas:* R. C. KLOVE. *Cultural Dichotomy in the Island of Hispaniola:* R. E. CRIST. *Problems of Grazing Administration in the Basins of Southern Wyoming:* W. CALEF. *Industrial Expansion in the United States, 1939–1947:* J. W. ALEXANDER. *A Consumer Oriented Classification of the Products of Tropical Agriculture:* H. ASCHMANN. *Canning in Northwestern Arkansas; Springdale, Arkansas:* IRENE A. MOKE. *Ahuriri Lagoon, New Zealand; a study of landscape change and reclamation:* B. H. FARRELL. *The Flounder Industry of the Soviet Far East:* V. KATKOFF. *African Coffee on Kilimanjaro; A Chagga "Kihamba":* E. S. MUNGER.

Journal of Accountancy

JUNE 1952. *How the Accountant Serves his Client in the Art of Tax Planning:* J. K. LASSER. *Renegotiation Board will Favor Efficient Contractors:* JOHN T. KOEHLER. *An Informal Accounting System for Administrative Costs:* H. W. WRIGHT. *How to Prepare Working Papers, Reports, for Small Audits:* LEO HERBERT. *The Accountant's Control Function is a Part of Management:* W. J. VALLER.

Industrial and Labor Relations Review

VOL. 5, NO. 3, APRIL 1952. *Collective Bargaining in Postwar Germany:* C. KERR. *Labor Union Lawyers; professional services of lawyers to organized labor:* R. M. SEGAL. *Railroad Grievance Machinery; a critical analysis:* H. R. NORTHRUP and M. L. KAHN. *An Administrative Appraisal of the New York State Board of Mediation:* A. STARK. *Legal Status of Union Work Permits:* H. J. LAHNE. *Conflict of Jurisdiction between National and New York State Labor Relations Boards:* K. LORENZ.

Revue d'Économie Politique

NO. 62, MARCH–APRIL 1952. *Le sous-développment et ses problèmes:* GASTON LEDUC. *Les difficultés d'élaboration d'une théorie générale de la répartition:* MARCEL CAPET. *La législation anti-trust aux Etats-Unis:* ANDRÉ GANDON. *Observations sur l'article de M. Albert Bartholoni:* MAURICE BYE.

Revue Économique

NO. 1, JANUARY 1952. *Cycle et structure:* JOHAN ÅKERMAN. *Essai d'une doctrine tierce du commerce international:* ERNEST TEILHAC. *Les coûts et les prix en courte période:* JACQUES LECAILLON. *Les ententes en France:* GILLES PASQUALIGGI. *Subsistances et matières premières:* ALFRED SAUVY. *La situation économique:* L. A. VINCENT and G. MATTHYS. *Réflexions sur l'histoire moderne de la guerre:* JACQUES MARITAIN. *Les fluctuations économiques aux États-Unis:* ANDRÉ MARCHAL.

Économie Appliquée

VOL. IV, NO. 3–4, JULY–DECEMBER. *En manière d'introduction; L'emploi chez Adam Smith:* HENRI AUJAC. *Le plein emploi dans la perspective spatiale:* ANDREAS PREDOHL. *Croissance économique et plein emploi:* WALTHER HOFFMANN. *Plein emploi et commerce extérieur:* HEINRICH RITTERSHAUSEN. *Les effets d'une politique de plein emploi sur la stabilité économique. Analyse formelle:* MILTON FRIEDMAN. *L'insta-*

bilité et la flexibilité du plein emploi : G. D. N. WORSWICK. *D'une politique d'hyper-emploi :* HONOR CROOME. *La politique britannique du plein emploi :* A. C. L. DAY. *Les statistiques de l'emploi et le chômage depuis 1946 :* R. LEVY-BRUHL and J. VACHER.

Revue de Science et de Législation Financières

NO. 2, APRIL–JUNE 1952. *Selecting a Suitable form of Death Levy :* HAROLD M. GROVES. *Swiss Finance and Currency :* E. ACKERMANN. *Note on Labor's Share in National Income :* J. LECAILLON. *Economic Functions of Public Enterprises :* A. TAUTSCHER. *Capital and Income Tax :* P. COULBOIS. *The Australian Pound :* L. E. BARAGWANATH. *The Political Economic and Financial Structure of the Principality of Monaco :* A. PASSERON.

Bulletin de l'Institut de Recherches Économiques et Sociales

VOL. XVIII, NO. 4, JUNE 1952. *La conjoncture économique de la Belgique :* MICHEL WOITRIN. *Statistiques économiques courantes.*

Revue de l'Institut de Sociologie

NO. 4, 1951. *L'empirisme statistique ; ses insuffisances et ses dangers :* ANDRÉ MARCHAL. *Les discussions sur le plein emploi. Essai de synthèse. Suggestions pour simplifier le débat :* P. LAMBERT. *Le choix entre l'expansion économique et la hausse des prix :* E. S. KIRCSHEN.

Population

NO. 1, JANUARY, MARCH 1952. *Productivité production, population optimum :* ALFRED SAUVY. *Vieillissement de la population besoins et niveau de vie des personnes agées :* JEAN DARIC. *La mortalité, phénomène biométrique :* JEAN SUTTER and LEON TABAH. *Contribution à l'étude des agglomérations françaises :* ÉDOUARD BENARD.

Schmollers Jahrbuch

VOL. 72, NO. 2, 1952. *Das Geheimnis der Organisation. Aus dem Nachlas :* FRANZ EULENBURG. *Zum Optimumproblem in der neueren Wirtschaftstheorie :* HEINZ KILMS. *Rechnungshof und Sparsamkeit in Frankreich :* FRIEDRICH VON DUNGERN. *Die Hoffinanziers Friedrichs des Grossen :* HEINRICH SCHNEE.

Jahrbücher für Nationalökonomie und Statistik

VOL. 164, NO. 3, MAY 1952. *Theoretische Analyse der deutschen Zahlungsbilanz 1949/1951 :* WILHELM KRELLE. *Grundlagen einer allgemeinen Theorie der Wahlakte :* J. HEINZ MULLER. *Die Wanderzuge der Westeuropaer nach dem zweiten Weltkrieg :* RODERICH VON UNGERNSTERNBERG.

Weltwirtschaftliches Archiv

VOL. 68, NO. 1, 1952. *Oligopolistic Indeterminacy :* FRITZ MACHLUP. *Kapitalismus und Weltmarktwirtschaft als Ergänzung und Gegensatz :* KURT WIEDENFELD. *Gründzuge der schwedischen Wirtschaftstheorie, vor allem der Stockholmer Schule, während der letzten 25 Jahre :* HARALD DICKSON. *Probleme und Arbeitsmethoden der internationalen Sozialpolitik :* ELMO PAUL HOHMAN.

Jahrbuch für Sozialwissenschaft

VOL. 2, NO. 1, 1951. *Marktmechanismus, wirtschaftliche Macht und Wirtschaftsordung :* THEODOR PUTZ. *Bilanz der Demontage. Nachkriegsmethoden internat. Industriepolitik und ihr Einfluss auf die Zukunft der europäischen Wirtschaft :* WILHELM HASENACK. *Die Indeterminiertheit des Preissystems. B ; Das Ungenügen der Theorie der Wahlakte und die Lösung des Problems :* GISBERT RITTIG.

Zeitschrift für die Gesamte Staatswissenschaft

VOL. 108, NO. 2, 1952. *Keynes, kritisch gesehen :* GERMAN BERNACER. *Der Gleichgewichtsbegriff als Grundlage der Verlaufsanalyse und der wirtschaftswissenschaftlichen Integration :* ALBRECHT FORSTMANN. *Mor-*

phologie des Sparens : PAUL W. FEUFF. *Die Verteilung der Nettoinvestitionen auf die Konsumgüter und Produktionsmittel-Industrie :* RUDOLF RICHTER. *England und die Industrialisierung Deutschlands :* W. O. HENDERSON. *Das Steueraufkommen als Mabstab :* BRUNO SCHULTZ. *Amerikanische Antitrustgesetze und Gewerkschaften :* FREDRIK NEUMEYER. *Vom Geist des Prozesses. Richterliches Denken und Staatsräson :* KARL ALFRED HALL.

Monatsberichte des Österreichischen Institutes für Wirtschaftsforschung

VOL. XXV, No. 4, APRIL 1952. In addition to routine articles : *Zur Entwicklung des Kreditvolumens. Die internationale Rohwarenmärkte unter dem Einfluss der konjunkturellen Abschwächung.*

De Economist

No. 2, FEBRUARY 1952. *Moeilijkheden op de weg naar economische eenheid van Europa :* F. HARTOG. *De crisisperiode in de Harrgse boekhandel omstreeks 1740 :* H. BEIJER. *Uit de Economist van 1852. Economische en sociale kroniek :* A. A. VAN AMERINGEN.

Giornale Degli Economisti e Annali di Economia

VOL. X, No. 11–12, NOVEMBER–DECEMBER 1951. *Il Relativismo nella Scienza Economica :* G. DI NARDI. *Massimi simultanei ed economia socialista :* E. ZACCAGNINI. *La disciplina coattiva della liquidita bancaria :* G. DELL' AMORE. *Le importazioni di capitali e la Bilanci dei pagamenti americana :* M. FANNO. *Problemi economici e sociali del dopoguerra :* L. DAL PANE. *In tema di dinamica operazionale delle scorte :* G. DEMARIA.

L'Industria

No. 1, 1952. *Un modello di equilibrio economico generale :* J. VON NEUMANN. *Nota sull'articolo di J. v. Neumann " Un modello di equilibrio economico " :* D. G. CHAMPERNOWNE. *Il contributo di Georgescu-Roegen allo schema di v. Neumann riguardante l'equilibrio economico generale :* F. BRAMBILLA. *La metodologia di Oskar Morgenstern :* F. DI FENIZIO.

Rivista Italiana di Demografia e Statistica

VOL. IV, NOS. 1–2, JANUARY–JUNE 1950. *Atti della XI Riunione Scientifica della Società Italiana di Demografia e Statistica, Milan, 16–17 December 1949. Introduzione alla Riunione : " Prezzi e reddito " :* L. MAROI. *Part I.—Reddito :* F. C. D'ANNA, E. D'ELLIA, F. EMANUELLI, S. GUIDOTTI. *Part II.—Prezzi :* G. BONIFACIO, D. BOTTA, L. SANT 'AMBROGIO, G. CARONE, E. CASINI, G. CICERCHIA, C. D'AGATA, M. DE LUCA, M. DE VERGOTTINI, F. BOSELLI E A. SMID, R. IEVOLELLA, G. BARSANTI.

Review of the Economic Conditions in Italy (Banco di Roma)

Vol. VI, No. 3, MAY 1952. *International Emigration Problems :* J. GUISTI DEL GIARDINO. *Two months of Economic Activity in Italy. Italian Economy in 1951. Latin America's Industrialization, Foreign Trade and Exchanges with Italy :* G. TUCCI. *The 1951–52 Sugar Output. Progress of the Electricity Industry in 1951. The Italian Citrus Fruit Market.*

Italian Affairs

VOL. I, No. 1, MAY 1952. This is the first issue of a new journal the object of which is to afford full information about Italy, her structure, her problems and her life to-day. *Trieste and Italy's Eastern Frontier. Unemployment and Population Pressure. Italian Political Life of Today. The Southern Italy Question. Agrarian Reform.*

Italian Economic Survey (The Association of Italian Joint Stock Companies)

MARCH–APRIL, 1952. *Costs. Italian Economic Situation. Statistical Tables.*

Economia Internazionale

VOL. V, NO. 2, MARCH 1952. *The Colombo Plan with Special Reference to Pakistan :* S. M. AKHTAR. *Il giuoco monetario dell'Europa :* J. F. BENNETT. *La guerra fredda e l'economia americana :* J. D. CALDERWOOD. *Comparability of Food Production and Consumption in Europe :* W. KLATT.

Moneda y Crédito

NO. 39, DECEMBER 1951. *Antonio Flores de Lemus :* AUGUSTIN VINUALES. *La Banca española en el quinquenio 1946–50 :* ILDEFONSO CUESTA GARRIGOS. *Una obra postuma de Walter Eucken :* J. HERNANDEZ ROIG.

El Trimestre Economico

VOL. XIX, NO. 1, JANUARY–MARCH 1952. *Tesis sobre el desarrollo economico de Cuba :* JULIÁN ALIENES UROSA. *Reflexiones sobre los paises insuficientemente desarrollados :* FREDERIC C. BENHAM. *Evolucion de la industria textil inglesa en le Edad Media :* JAN BAZANT. *El institucionalismo como crítica de la teoría económica clásica :* SANTIAGO P. MACARIO. *Filosofía y ciencia económica :* JOSE ANTONIO MAYOBRA.

Boletin de Estudios Económicos

NO. 25, JANUARY 1952. *Enstructura espacial de la población y renta de españa :* ROMAN PERPINA. *Eficacia del control del credito por medio del tipo de interes y por la seleccion de las inversiones :* ALFRED POSE. *Función económica de los sindicatos obreros :* FRANCISCO VITO. *La Ficha de control y los límites de tolerancia :* ENRIQUE CHACON. *La Planificación en inglaterra :* A. W. TUKE.

Revista Brasileira de Economia

NO. 4, DECEMBER 1951. *As Dimensões do Mercado e o Incentivo à Inversao. Disparidades Internacionais de Renda e a Capacidade de Poupar. Fontes Internas da Formação de Capital. Fontes Externas da Formação de Capital. Politica Comercial e Formação de Capital.*

Revista de Ciencias Económicas

VOL. III, NO. 32, NOVEMBER–DECEMBER 1951. *Los costos en la Industria Química :* JOSE F. PUNTURO. *A veinte años de la teoría del multiplicador :* JUAN JOSÉ GUARESTI. *Responsabilidad social de empleadores y trabajadores :* CARLOS R. ARGIMON. *Perspectivas economicas para 1952 :* PEDRO R. CHAPOUILLE. *La descapitalización de las empresas y nuestra legislación fiscal :* ENRIQUE JORGE REIG.

Estudos Economicos

NO. 5 and 6, MARCH and JUNE 1951. *A produtividade da mao de obra têxtil em cinco paises da América Latina. A indústria quimica no Brasil. Politica Econômica Externa dos Estados Unidos.*

Conjuntura Econômica

NO. 3, MARCH 1952. *Meios de pagamento—Uniformização de critério de apuração. O cacau brasileiro no mercado internacional. Produção de Volta Redonda em 1952. Confronto entre os automóveis americanos e os europeus. Dificuldades da navegação interior no Brasil. Execução orçamentária da Uniao em 1951. Lucros e perdas nas sociedades anônimas —Dados iniciais. Mercadod imobiliario no Distrito Federal e em Sao Paulo. A taxa de juros hipotecários. Mercado de câmbio.*

Revista de la Escuela de Estudios Contables

VOL. IV, NO. 13, JANUARY 1952. *Técnicas Estadísticas en la Auditoría :* R. A. Y. PRIETO. *Evolución de la Contabilidad y de la Profesión de Contador Público en México :* S. G. GUIOT. *Análisis de los Estados Financieros :* E. G. ISLA. *Etica Profesional de la Profesión de Contabilidad :* J. L. CAREY. *Las Salvedades en los Dictámenes de Contadores Públicos :* L. R. DE VELASCO. *Valuación de Inventarios a Precio de*

Venta : A. O. RAVIZE. *Moneda y Activos Depreciables :* A. H. DE LA PORTILLA. *El Balance, el Valor y las Reservas :* A. PRIETO. *El Estado de Movimiento de Recursos :* M. ANZURES. *Estados Financieros para Solicitudes de Crédito :* ASOCIACIÓN DE BANQUEROS DE MÉXICO.

Nationaløkonomisk Tidsskrift

No. 90, 1952. *Huslejeudligning :* SVEN DANØ. *Om Realindkomst :* P. NØRREGARD RASMUSSEN. *Økonomisk Historieskrivning om Nyere tid I økonomisk teori og Statistik :* POUL MILHØJ. *Lønregulering efter Pristal :* KJELD PHILIP. *En studie I inflationens teori :* JØRGEN PEDERSON. *Om Objektivited :* JØRGEN PEDERSON.

Ekonomiska Samfundets Tidskrift

No. 2, ARGANG 1952. *Bytesforhallandet i utrikeshandeln :* GUSTAF HORTLING. *Synpunkter pa inkomstbeskattningen :* GUNNAR FOUGSTEDT. *Prissankningarna ur handelns synpunkt :* KURT SUNDVALL.

Index

MARCH 1952. *The New Credit Restrictions in Sweden. The Economic Situation. The Shift in the Distribution of Incomes. Swedish Government Finances.*

Skandinaviska Banken Aktiebolag

VOL. XXXIII, NO. 2, APRIL 1952. *Northern Traveller's Cheques—II :* P. BRUNDELL. *Mild Inflation for Ever? :* P. JACOBSSON. *Pension Funds and Capital Problems of the Swedish Companies. Public Finances and Inflation. Wages and Productivity :* E. HARDIN.

The Economic Studies Quarterly (In Japanese)

VOL. III, NO. 1, JANUARY 1952. *Confronting Aspects of Socialism and Capitalism :* ICHIRO NAKAYAMA. *On the Transmutation of Capitalism :* YASUMA TAKADA. *Capitalism and Economic Progress :* CHOTARA TAKAHASHI.

NEW BOOKS

British

BAUMOL (W. J.). Welfare Economics and the Theory of State. London : Longmans, Green, 1952. 9″. Pp. v + 171. 21*s*.

[To be reviewed.]

BENHAM (F.). The National Income of Malaya, 1947–49. (With a Note on 1950). Singapore : Government Publications Bureau, 1951. 8½″. Pp. 272. $5.

[In a characteristically lucid and matter-of-fact style Dr. Benham describes his latest venture in national-income estimation. Those who are familiar with his estimates for some of the West Indian colonies will recognise the same unpretentious, informal approach. Those who are beginners in the field of national income estimation will welcome the step-by-step account of how each constituent element in the estimates of national product for each of the years covered was constructed and built into the final picture. The student of colonial economies will find the Malayan economy more adequately documented than most as a result of Dr. Benham's researches. The more general reader, and even the more general student of national income, will find the result disappointing, however. There are only about twenty pages of discussion of the methodological significance of the estimates, and less than seven pages are devoted to their political significance. This is probably an inevitable result of the restrictions placed by Dr. Benham's official position, but it means that a piece of research which is important enough to deserve a wide market will in fact be read only by a few specialists.]

BLADEN (V. W.). An Introduction to Political Economy. Revised and edited by Alison Kemp. University of Toronto Press, 1951 (London: Geoffrey Cumberlege, 1952). 9″. Pp. viii + 303. 30*s*.

[To be reviewed.]

BURNET (JEAN). Next-Year Country. A Study of Rural Social Organization in Alberta. University of Toronto Press, 1951 (London: Geoffrey Cumberlege, 1952). 9″. Pp. xv + 188. 30*s*.

[The Hanna district of east-central Alberta, which is the subject of this study in rural sociology, is, as the author makes clear, untypical of rural communities, even in the Great Plains of North America, in a number of important respects. It was originally settled in the years before the First World War, and its most prosperous days were already over by 1917. Since then the inadequate rainfall, together with the slump in agricultural prices in the thirties, has made its wheat-growing economy scarcely capable of affording subsistence to the farmers. This is notwithstanding the large average size of holding, which is responsible for much of the social isolation of farmers and their families. Output per acre has tended to decline on account of soil erosion. Many of the younger generation left the district between the wars, and as this was not balanced by immigration, the age structure of the population is now heavily biased in favour of the elderly, many of whom were the original settlers. Dr. Burnet's findings lead her to the conclusion that the inhabitants of Hanna have in all the most material respects failed to achieve "social adjustment." Dr. Burnet does not make altogether clear what she would take as an indication that social adjustment *had* been reached, or how it could have been reached in view of the economic background; but she says much that is interesting and valuable on the interaction between social and economic forces in determining the character, for example, of the class structure, of ethnic divisions and of the relations between town, country and village.]

CLOW (A. and NAN). The Chemical Revolution. London: Batchworth Press, 1952. 8½″. Pp. xvi + 680. 110 plates, 16 diagrams. 50*s*.

[To be reviewed.]

COLE (G. D. H.) Introduction to Economic History 1750–1950, London: Macmillan, 1952. 7½″. Pp. x + 233. 10*s*.

[To be reviewed.]

CONAN (A. R.). The Sterling Area. London: Macmillan, 1952. 8½″. Pp. v + 192. 16*s*.

[To be reviewed.]

THE CO-OPERATORS' YEAR BOOK 1952. Edited by Arthur Hemstock and Alfred R. Perkins. Leicester: Co-operative Productive Federation Ltd., 1952. 7″. Pp. 2 + 112. 1*s*. 6*d*.

[This year's issue includes articles on various aspects of the co-operative movement at home and abroad, together with statistical appendices and a directory of co-operative organisations.]

CRAWFORD (J. G.), M.Ec. The Economics of Conservation. Canberra: Bureau of Agricultural Economics, 1952. 8½″. Pp. 9 + 59.

[The author argues that although the tendency to exploitative depletion of Australia's soil capital may not have been altogether lacking in economic justification in the past, the growing world demand for primary products will make a vigorous national soil conservation policy an imperative necessity in the future.]

CUMBERLAND AND HUDSON JOURNALS. Edited by E. E. Rich. First Series 1775–79. London: Hudson's Bay Record Society, 1951. 9½″. Pp. xi + 382.

[This is the first of two volumes containing the journals of two of the Hudson Bay Company's inland trading posts during the period of fierce competition between the Company and the private traders who in 1779 came together to form the North West Company.]

DICK (JOHN REID). The Engineer's Approach to the Economics of Production. London: Sir Isaac Pitman, 1952. 8½". Pp. v + 248. 21*s*.

[To be reviewed.]

DRUMMOND (J. M.). The Finance of Local Government. London: Allen and Unwin, 1952. 8½". Pp. vii + 206. 20*s*.

[To be reviewed.]

THE FABIAN SOCIETY. Taxation To-day. Evidence to the Royal Commission on Taxation. By a Fabian Research Group. Fabian Research Series No. 149. London: Fabian Publications and Victor Gollancz, 1952. 8½". Pp. 17. 1*s*.

[The authors argue, *inter alia*, that the effect of taxation on effort is much exaggerated, that the complaint that taxation causes depletion of industrial capital fails to distinguish properly between maintaining a company's physical capital intact and maintaining it intact without further borrowing, and that there is much to be said for the imposition of a tax on realised capital gains. The argument throughout is well presented but not particularly profound.]

FEDERATION OF BRITISH INDUSTRIES. A National Fuel Policy. Evidence Submitted to the Committee on National Fuel Policy. London: F.B.I., 1952. 8½". Pp. 16.

[This statement stresses the importance of increasing coal supply and improving fuel efficiency in view of the large unsatisfied demand for coal at the present time, both for home consumption and for export.]

FEDERATION OF BRITISH INDUSTRIES. Computation of Trading Profits for Taxation Purposes. Comment on the Report of the Millard Tucker Committee. London: F.B.I., 1952. 8½". Pp. 26.

[A statement of the reasons which lead the Federation of British Industries to dissent from the principal conclusions of the Millard Tucker Committee's Report with regard to the measurement of profits for tax purposes in a period of rising prices. The authors touch upon, but do not really succeed in answering, the crucial contention that it would be inequitable to allow industry to deduct from taxable income sums necessary to ensure the maintenance of the value of its assets intact in real terms when the same privilege is not allowed to tax-payers generally.]

FINER (S. E.). The Life and Times of Sir Edwin Chadwick. London: Methuen, 1952. 8½". Pp. x + 555. 42*s*.

[To be reviewed.]

FRUMKIN (GREGORY). Population Changes in Europe since 1939. London: Allen and Unwin, 1952. 9". Pp. 3 + 191. 30*s*.

[This extremely careful compilation seeks to present statistics of population change over the periods 1939–45 and 1946–47 in strictly comparable form for the different countries of Europe. The author, who was formerly editor of the *Statistical Year Book of the League of Nations*, has made a brave attempt to overcome the difficulties caused by territorial changes, forced migrations and the uncertainties of figures of war losses and executions of Jews. In his summary of trends revealed, Mr. Frumkin emphasises the tendency to the disappearance of national minorities as a result of the Second World War, which he considers to mark a step towards a new Dark Age.]

GORDON (WENDELL C.). The Economy of Latin America. London: Geoffrey Cumberlege, 1950. Pp. vi + 434. 36*s*.

[This book is based on the questionable assumption that there is such a reality as the economy of Latin America, and therefore, instead of a series of studies of the different countries in this vast geographical region, the different aspects or "institutions" of the economy are considered in turn. Thus the book is divided into six parts—the setting, organisation of production, raising of capital, pricing and production control, international trade and conclusions—and each part has a number of chapters—*e.g.*, under organisation of production there are chapters on agriculture and land tenure, mining, transportation, manufacturing, etc.

This method of study certainly has some advantages, but the disadvantages would seem heavily to outweigh them. Secondly, the author, though dealing bravely with such an enormous subject matter, has produced a work which is inadequate as an encyclopædia or even as a comprehensive reference book, but which makes extremely indigestible reading: a readable book covering so wide and varied a field could only be produced by painting pictures with a large brush and the use of bright colours, whereas Professor Gordon's method is to fire off machine-gun belts of highly compressed information. This makes it easy to accuse him of omissions—thus the chapter on agriculture is almost wholly concerned with land tenure and gives little idea of what is produced, whereas that on manufacturing is little more than a catalogue of firms and products—but a British critic at least will feel that there can be little excuse for the virtual omission of British capital as a factor in Latin American economic development. There are also some curiously crude mistakes, *e.g.*, that the growing of sisal has been largely transplanted from Yucatan to the East Indies (p. 273). The book, as the author hopes, may meet " the need for a general survey to fill the requirements of the businessman and public official and the need for a satisfactory text for survey courses on the economy of Latin America " in the U.S.A., but it is doubtful whether it will do so elsewhere.]

HANNAN (J. P.) and FARNSWORTH (A.). The Principles of Income Taxation deduced from The Cases. London: Stevens, 1952. 8½". Pp. lvi + 582. 63*s*.

[To be reviewed.]

HAWTREY (R. G.). Economic Aspects of Sovereignty. London: Longmans, Green, 1952. 8½". Pp. vii + 191. 24*s*.

[In this new edition of his distinguished work, Professor Hawtrey has retained the original lectures unaltered as they were published in 1930, and has added a series of new chapters discussing the bearing of subsequent events on the principal themes previously treated.]

HICKS (J. R.). The Social Framework. (Second Edition). Oxford: Clarendon Press, 1952. 7½". Pp. vi + 283. 12*s*. 6*d*.

[The many teachers of economics who have learned to use Professor Hicks' book as an almost indispensable first introduction to economics will be delighted to have this new revised edition. It has grown by about sixty pages. It has shed most of the minor private disputations with the official national income statisticians which some of us felt to be an intrusion in the first edition. The first nine chapters are little altered. Chapter X now contains a guess at the National Capital. Part IV, on The Social Product, has been almost completely rewritten. It is now illustrated by the British National Income in 1949. Three new chapters, on the techniques of Social Accounting, are, as Professor Hicks frankly admits, on a higher standard than the rest of the book, but it is very useful to have them here, for later reference if need be.]

HIGGINS (B.). What Do Economists Know? Six Lectures on Economics in the Crisis of Democracy. Melbourne University Press, 1951 (London: Cambridge University Press, 1952). 8½". Pp. viii + 166. 15*s*.

[To be reviewed.]

THE INSTITUTE OF COST AND WORKS ACCOUNTANTS. The Accountancy of Changing Price Levels. London: Institute of Cost and Works Accountants, 1952. 9½". Pp. 129. 15*s*.

[A detailed treatment, set out in the form of a text-book, of the principles and procedures that may be adopted by cost accountants in order to show the replacement cost of fixed assets and materials as a charge against profits.]

THE INSTITUTE OF COST AND WORKS ACCOUNTANTS. Terminology of Cost Accountancy. Pp. 24. The Accountancy of Changing Price Levels (abridged version). Pp. 24. London: Institute of Cost and Works Accountants, 1952. 9½". 2*s*. 6*d*. each.

[*Terminology of Cost Accountancy* is not an essay on terminology but a classified list of some two hundred terms in use in cost accountancy, with definitions.

The definitions given have the official sanction of the Institute of Cost and Works Accountants. *The Accountancy of Changing Price Levels* is an abridged version of the book noted above.]

INTERNATIONAL ASSOCIATION FOR RESEARCH IN INCOME AND WEALTH. Bibliography on Income and Wealth, 1937–1947. Volume I. Edited by D. Creamer. Cambridge: Bowes and Bowes, 1952. 10″. Pp. 184. 63*s*.

[This volume sets up a new standard in economic bibliography. The seven sections into which it is divided are as follows: social accounts, national income and their variants; wealth; distribution of income and wealth by size groups; estimates of labour force by geographic area; international comparisons of income, wealth and labour-force estimates; economic analysis centred on concepts or estimates of income and wealth; and bibliographies on income and wealth. The compilers have endeavoured to include *all* items published between 1937 and 1947 relevant to these topics, subject to certain limits indicated in the foreword. Nearly half the items listed are estimates of national income by geographic area. The title of each of the 1,509 items is followed by a description of its contents, ranging in length from a single line to a couple of hundred words or more. The arrangement in sections, in conjunction with the very full indices, is admirably designed for convenient reference. One or two features may be criticised: the editing of certain of the foreign-language items is not entirely satisfactory, and comment cannot be withheld on the high price at which the volume is published. But the value of such a compilation to students of national income and the other associated topics can, it is evident, hardly be overestimated. A second volume is promised to deal with literature appearing in 1948 and 1949, and further volumes are to follow covering later years. It is to be hoped that the compilers' evident desire for perfection and completeness will not cause the publication of these to be too long delayed.]

KENDALL (M. G.) (Ed.). The Sources and Nature of the Statistics of the United Kingdom. Volume I. London: Oliver and Boyd (for the Royal Statistical Society), 1952. 10″. Pp. viii + 352. 21*s*.

[To be reviewed.]

LANGLEY (KATHLEEN M.). Capital Gains Taxation. A Study mainly of American Experience. Fabian Research Series No. 150. London: Fabian Publications and Victor Gollancz, 1952. 8½″. 1*s*.

[Among the main conclusions drawn in this competent and useful survey of the lessons of American experience is that the weakness of capital gains taxation involved in the need to confine it to *realised* capital gains would be much less serious in this country than it has been in the United States, because of the much higher level of death duties which would fall on gains unrealised in the owner's life-time.]

LUTTRELL (W. F.). The Cost of Industrial Movement. Cambridge University Press, 1952. 9½″. Pp. vi + 104. 18*s*.

[To be reviewed.]

MARSH (D. R.). Corporate Trustees. London: Europa Publications, 1952. 8½″. Pp. xiv + 318. 25*s*.

[An erudite and interestingly written account of the trustee and executor business done by corporations, including particularly the Public Trustee and the banks. The author describes the process by which the corporate trustee has reached his present importance, and analyses the nature of the work he performs. From the economist's point of view the most interesting chapter is that on charges and profits, and in view of the extreme intricacy of the problems of joint supply that arise in this field, it might with advantage have been dealt with at greater length. Mr. Marsh has a great deal of fun at the expense of solicitors who complain of what they conceive to be unfair competition by banks outside their own proper line of business (though he does not have much to say about one of the commonest complaints, namely that the banks attract business by advertising, which is forbidden to the professional man); but he rather lets the cat out of the bag by admitting (pp. 163–4) that it is often doubtful whether the trustee and executor departments of banks cover their costs, "If they incur a debit at profit

and loss the companies do so in full knowledge that poor takings on the roundabouts mean better returns on the swings—and the provision of swings is still their main occupation."]

MAUNDER (A. H.). Size and Efficiency in Farming. Oxford: Institute for Research in Agricultural Economics, 1952. 8". Pp. 6 + 21. 2*s*.

[The author uses the results of the Farm Management Survey for two groups of homogeneous farms to investigate the relationship between size and efficiency, in particular the efficiency of individual factors of production. Using three main criteria, ratio of value of gross output to value of input of the individual factor under consideration, ratio of value of gross output to value of other inputs, and ratio of inputs of other factors to input of factor under consideration, he finds that in the case of the group of dairy farms studied, there was no relationship between size and efficiency, but that in the group of light-land arable farms there was a positive correlation between size, as measured by value of the several inputs, and efficiency. The factors of production distinguished are land, labour, intermediate capital (mainly machinery) and short-term capital. The relation between amount of input and efficiency is especially marked with intermediate capital. The author is anxious to emphasise the dangers involved in drawing too sweeping conclusions from these interesting results.]

MEADE (J. E.) and STONE (R.). National Income and Expenditure. 3rd revised edition. Cambridge: Bowes and Bowes, 1952. 7½". Pp. 48. 3*s*.

[In the new edition of this well-known pamphlet the figures have been brought up to date, and useful new sections have been added on quantity and price changes and on social accounting.]

MONCK (B.). How the Civil Service Works. London: Phœnix House, 1952. 8½". Pp. vi + 258. 25*s*.

[To be reviewed.]

MORRIS (S. T.), M.Sc., and LUXTON (H. W. B.), B.Sc. An Economic and Financial Survey of Farming in the South West of England. Exeter: Northgate Press, 1952. 8½". Pp. 7 + 80. 5*s*.

[Among the leading conclusions emerging from the extensive detail of this survey are that in many of the farms studied output could profitably have been at a rather higher level, and that in 1950/51 cost had generally risen relatively to returns compared with the previous year. The latter result is attributed partly, but not entirely, to the unfavourable weather conditions that prevailed in the south-west in 1950.]

MUNBY (D. L.). The Rent Problem. Fabian Research Series No. 151. London: Fabian Publications and Victor Gollancz, 1952. 8½". 1*s*.

[Mr. Munby has made a valuable addition to the literature on the seemingly well-nigh insoluble problem of rent policy. He starts off with an admirable account of the wastes and inequities involved by the Rent Restriction Acts and by our illogical system of taxing and subsidising houses at the same time. He then goes on to give his reasons for rejecting the "back to the price mechanism" approach. In the first place, he argues, the supply of new houses is in the foreseeable future likely to be determined by the exigencies of the government's overall investment policy; so allowing rents to rise would not serve the purpose of increasing supply. Moreover, the evidence that there is at present vast "under-occupation" of houses which would be eliminated by the raising of artificially low rents is much too inconclusive to justify the sweeping conclusions that are sometimes drawn about this part of the problem. The raising of rents to an extent sufficient to cover the cost of repairs is obviously unobjectionable, but to free rents altogether at the present time would give large and economically purposeless windfall profits to many landlords; and in any case private ownership of urban house property stands in the way of effective town planning. The solution which Mr. Munby himself favours is that the bulk of urban working-class houses should be acquired by local authorities. Local authorities could then "follow a flexible rent policy within the framework of a national scheme," the principle of subsidies being retained or not as desired, and could allocate new

houses and houses falling vacant on criteria of need. Mr. Munby argues that the assessment of need on more or less objective principles is particularly easy in the case of accommodation, so that controls can do the job just as well as the price system, and better. The market in middle-class houses is to be freed from controls—presumably on the grounds that the middle classes are capable of fending for themselves against the tender mercies of the price mechanism, though Mr. Munby is not altogether happy about the radical division of the house market into two sectors that this would involve. Many of the arguments Mr. Munby advances are evidently highly controversial, but his contribution is eminently worthy of study.]

DE NEUMAN (A. M.). The Economic Aspects of Nationalization in Great Britain. Cambridge: Students' Bookshops, 1952. 11". Pp. 52. 8*s*. 6*d*.

[To be reviewed.]

PROBLEMS OF NATIONALIZED INDUSTRY. Edited by W. A. Robson. London: Allen and Unwin, 1952. 9". Pp. 6 + 390. 25*s*.

[To be reviewed.]

ROBERTS (F.). The Cost of Health. London: Turnstile Press, 1952. 8½". Pp. 200. 16*s*.

[To be reviewed.]

SCHNEIDER (E.). Pricing and Equilibrium. An Introduction to Static and Dynamic Analysis. Translated from the original German by T. W. Hutchison. London: William Hodge, 1952. 8½". Pp. xii + 327. 25*s*.

[To be reviewed.]

SCHUMPETER (J. A.). Ten Great Economists. From Marx to Keynes. London: Allen and Unwin, 1952. 8½". Pp. xiv + 305. 21*s*.

[To be reviewed.]

SCITOVSKY (TIBOR). Welfare and Competition. London: Allen and Unwin, 1952. 8½". Pp. lx + 457. 25*s*.

[To be reviewed.]

SELF (SIR HENRY) and WATSON (ELIZABETH M.). Electricity Supply in Great Britain. London: Allen and Unwin, 1952. 8½". Pp. 1 + 219. 20*s*.

[To be reviewed.]

SMITH (H.). Introduction to Economic Organisation. London: Sylvan Press, 1952. 7½". Pp. 189. 12*s*. 6*d*.

[To be reviewed.]

SPEAKMAN (A. J.). Work Study and Incentives. An Introduction. Mechanical World Monographs No. 63. Manchester: Emmott, 1951. 7½". Pp. 90. 4*s*.

[The author succeeds in giving a clear and interesting picture of the general principles of time-and-motion study and of its relation to incentive systems of wage payment, though his detailed descriptions of methods are not always easy to follow and his digressions on more general economic issues are sometimes unhappy.]

SPENCE (C. F.). The Portuguese Colony of Moçambique. An Economic Survey. Cape Town: Balkema, 1951. 9½". Pp. 133.

[A survey of the principal agricultural and other products of Moçambique with a discussion of its potentialities, written by a business man resident in the colony.]

STARK (W.). Jeremy Bentham's Economic Writings. London: Allen and Unwin, 1952. 8½". Pp. 7 + 412. 30*s*.

[To be reviewed.]

TAWNEY (R. H.). Equality. 4th revised edition. London: Allen and Unwin, 1952. 8½". Pp. 285. 15*s*.

[In this fourth edition of his celebrated work Professor Tawney has left the text substantially unaltered and added an epilogue on the experience of the years 1938–50. In this he welcomes the advances towards greater equality that these years have witnessed, and concludes with some characteristically brilliant remarks in refutation of the notion that equality is inimical to freedom.]

TEW (B.). International Monetary Co-operation, 1945–1952. London: Hutchinson's University Library, 1952. 7½". Pp. 180. 8*s*. 6*d*.

[To be reviewed.]

TOYBNEE (A.) and ASHTON-GWATKIN (F. T.) (Eds.). The World in March 1939. Survey of International Affairs, 1939–1946. London: Oxford University Press (under the auspices of the Royal Institute of International Affairs), 1952. 9½". Pp. xvi + 546. 45*s*.

[To be reviewed.]

TRUSTEE SAVINGS BANKS YEAR BOOK. Fakenham: Wyman and Sons, 1952. 7". Pp. 5 + 175.

[This year's issue contains the usual features, including a review of the year and a full list and directory of Trustee Savings Banks.]

VON STACKELBERG (HEINRICH). The Theory of the Market Economy. Edinburgh: Hodge, 1952. 8½". Pp. v + 238. 25*s*.

[To be reviewed.]

WARREN (J. H.). The Local Government Service. London: Allen and Unwin, 1952. 8½". Pp. v + 222. 18*s*.

[To be reviewed.]

ZWEIG (F.). The British Worker. London: Penguin Books, 1952. 7". Pp. 243. 2*s*. 6*d*.

[To be reviewed.]

Irish

Ó NUALLÁIN (L.). Ireland—Finances of Partition. Dublin: Clonmore and Reynolds (London: Burns Oates and Washbourne), 1952. 8½'. Pp. 196. 18*s*.

[To be reviewed.]

Indian

JATHAR (G. B.) and BERI (S. G.). Elements of Indian Economics. Being Part II of Introduction to Economics. Madras: Oxford University Press, 1951 (London: Geoffrey Cumberlege, 1952). 8½". Pp. v + 200. 8*s*. 6*d*.

[This is a new, fifth, edition of a very well-known text-book.]

JENNINGS (SIR IVOR). The Economy of Ceylon. 2nd edition. Madras: Oxford University Press, 1951 (London: Geoffrey Cumberlege, 1952). 8½". Pp. xiv + 194. 10*s*. 6*d*.

[This is a new edition of a book reviewed in this JOURNAL in March 1950, by Mr. P. T. Bauer. The first edition was largely based on pre-war data; in the new edition it has been possible to make considerable use of newer post-war material.]

MEHTA (M. M.). Combination Movement in Indian Industry. Allahabad: Friends' Book Depot, 1951. 8½". Pp. ii + 98. Rs. 4/8.

[This is in the main a study of the extent of interlocking directorships and of concentrations through the leading managing agency firms.]

MOHNOT (SOHAN RAJ). Indian Economic Policy. Allahabad: Friends' Book Depot, 1951. 8½". Pp. 2 + 224. Rs. 6 or 10*s*.

[The author makes a plea for a planned and integrated policy, and then proceeds to discuss both the background and the problems that must be solved.]

PUNEKAR (S. D.). Industrial Peace in India. Bombay: Vora & Co., 1952. 7". Pp. 5 + 117.

[The author, who is on the staff of the Indian Ministry of Labour and has written several books on labour problems in India, has produced a pamphlet, which though addressed to the general reader, is scholarly and informative. He deals with the general issues, the short-term and immediate causes of industrial unrest, the long-term trends of industrialisation and of industrial relations, and the background of good or bad government. He then goes on to the several rôles of the State, the employer, the employees and the public, and deals finally with the methods of settlement of disputes. He emphasises in conclusion that the main defect in Indian industrial relations is the lack of co-operation at the lowest level, between the individual employer and his own workers.]

RESERVE BANK OF INDIA. Statistical Statements relating to the Co-operative Movement in India for the year 1949–50. Prepared by the Agricultural Credit Department. Bombay: K. Sarvothama Rao for the Reserve Bank of India, 1951. 13". Pp. iv + 77. Rs. 2.

[This year's edition contains the usual particulars, together with a number of new tables and other features.]

SEN (S. N.). Central Banking in Undeveloped Money Markets. Calcutta: Bookland, 1952. 8½". Pp. viii + 246. 18*s*.

[To be reviewed.]

VAKIL (C. N.) and BRAHMANANDA (P. R.). Economics of Electricity Planning. Bombay: School of Economics and Sociology, 1952. 10". Pp. 8 + 66.

[Deficiency of rainfall has necessitated an overall 33·3% cut in the basic consumption of all mills (except cotton mills), factories, workshops, offices and other consumers of electrical energy in the Bombay area. This pamphlet seeks to measure the very serious economic consequences.]

American

ANDERSON (E. N.). Process Versus Power: Studies in Modern Culture. Lincoln: University of Nebraska, 1952. 9". Pp. vii + 136.

[The central theme running through these essays is the contrast between the society of process, as represented by modern Western industrial democracies, and the society of power, as found, in varying forms, under régimes of feudalism, Nazism and communism.]

ANTHONY (ROBERT N.), assisted by DAY (JOHN S.). Management Controls in Industrial Research Organizations. Boston: Harvard Graduate School of Business Administration. London: Bailey Bros. and Swinfen, 1952. 8". Pp. v + 537. 54*s*.

[To be reviewed.]

BARDES (GEORGE F.). Distribution of Profits in the Modern Corporation. Washington, D.C.: Catholic University of America Press, 1951. 9″. Pp. v + 181.

[After a survey of the economic theory of profit and its applicability to modern corporations characterised by separation of ownership from control, the author goes on to consider the issues of moral theology involved in the light of the basic principle of commutative justice.]

BAUMOL (WILLIAM J.). Economic Dynamics. An Introduction. New York: Macmillan, 1951. 8½″. Pp. vii + 262. 37*s.* 6*d.*

[To be reviewed.]

BEHRENS (C. F.). Commercial Bank Activities in Urban Mortgage Financing. New York: National Bureau of Economic Research, 1952. 9″. Pp. xix + 131. $2.50.

[A factual survey of the legal framework of this type of lending, its importance in the urban mortgage market as a whole, the types and terms of loans granted and the profitability of the business to the banks engaging in it.]

BLOUGH (ROY). The Federal Taxing Process. New York: Prentice-Hall, 1952. 9″. Pp. vii + 506.

[A study of federal taxation written not in the manner of the ordinary text-book on public finance but from the point of view of the process by which tax laws are evolved in practice. The author analyses the part played by Congress, the executive branch of government and other organisations and interests in the shaping of tax policy, and then goes on to discuss the various considerations that have to be weighed in deciding upon the level of taxation to be imposed and its most equitable distribution.]

THE BROOKINGS INSTITUTION. Rearmament and Anglo-American Economic Relations. A Problem Paper. Washington: The Brookings Institution, 1952. 9″. Pp. viii + 64. 60 cents.

[After a description of the background and development of the problem, in more or less familiar terms, this paper goes on to set out the alternative courses of action available to the United States, together with the arguments in favour of each, in the style adopted in earlier Brookings Institution publications.]

BURNS (A. F.) (Ed.). Wesley Clair Mitchell. The Economic Scientist. New York: National Bureau of Economic Research, 1952. 9″. Pp. viii + 387. $4.00.

[To be reviewed.]

BURNS (ARTHUR F.). The Instability of Consumer Spending. New York: National Bureau of Economic Research, 1952. 9″. Pp. 3 + 87.

[The essay with which Arthur F. Burns introduces this survey of the National Bureau's activities in 1951 discusses the evolution of thought as a result of which it has become recognised that analysis of consumption expenditure is scarcely less complicated and scarcely less important in the study of economic fluctuations and economic development than is analysis of the investment process.]

BURSK (E. C.) (Ed.). Thinking Ahead for Business. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1952. 8½″. Pp. viii + 215. 21*s.*

[The purpose of this rather misleadingly entitled symposium is "to consider the major political, economic and sociological forces throughout the world which promise to have such a profound effect on the future course of American business." Part I deals with international questions, largely of a political character, and Part II discusses such topics as inflation, controls and statesmanship in business. The contributors are mostly politicians, civil servants and business leaders.]

COMMUNISM: WHERE DO WE STAND TODAY? Washington: Chamber of Commerce, 1952. 9″. Pp. 1 + 55. 50 cents.

[Emanating as it does from a presumably responsible organisation, this document provides a remarkable instance of the fanaticism which fear of Communism has produced in the United States.]

DALE (E.). Planning and Developing the Company Organization Structure. Research Report No. 20. New York: American Management Association, 1952. 9″. Pp. 232. $4.50.

[To be reviewed.]

FOSDICK (R. B.). The Story of the Rockefeller Foundation. New York: Harper, 1952. 9½″. Pp. xiii + 336. $4.50.

[In this interesting and well-written survey, the author, who was President of the Rockefeller Foundation from 1936 to 1948, recounts the history of the Foundation since its origin in 1913 and describes the work which it has made possible, at the start mainly in the sphere of medicine and public health and later over a broader front. The credit for the establishment of the Foundation goes in large measure to Rockefeller's friend and adviser Frederick T. Gates, and Mr. Fosdick analyses the part played by Gates and other leading personalities in the shaping of the Foundation's policy.]

FOSSUM (PAUL R.). Principles of Economic Development. Washington: The College Press, 1952. 8½″. Pp. 9 + 247. $3.00.

[To be reviewed.]

GALBRAITH (J. K.). American Capitalism. The Concept of Countervailing Power. Boston: Houghton Mifflin Co., 1952. 8½″. Pp. xi + 217. $3.00.

[To be reviewed.]

GALENSON (W.) (Ed.). Comparative Labor Movements. New York: Prentice-Hall, 1952. 9″. Pp. xiv + 599.

[To be reviewed.]

GUIDE TO THE WESTERN HISTORICAL MANUSCRIPTS COLLECTION. The University of Missouri Bulletin. Columbia: University of Missouri, 1952. 9″. Pp. 6 + 125.

[A list of the 598 documents in this collection, with brief descriptions of the contents of each.]

HAMBERG (D.). Business Cycles. New York: The Macmillan Co., 1951. 8½″. Pp. xvii + 621. 37*s*. 6*d*.

[To be reviewed.]

HARRIS (SEYMOUR E.) (Ed.). Schumpeter, Social Scientist. Cambridge, Mass.: Harvard University Press, 1951 (London: Geoffrey Cumberlege, 1952). 11″. Pp. x + 142. 25*s*.

[To be reviewed.]

HOFFMAN (G. WRIGHT). Character and Extent of Over-The-Counter Markets. Philadelphia: University of Pennsylvania Press, 1952. 10½″. Pp. vi + 93. $1.00.

[This is the third of a series of studies prepared by the Securities Research Unit of the Wharton School, University of Pennsylvania, dealing with security transactions taking place elsewhere than on organised exchanges.]

JAFFE (A. J.) and STEWART (CHARLES D.). Manpower Resources and Utilization. London: Chapman and Hall. New York: John Wiley & Sons, 1951. 9″. Pp. v + 532. $6.50.

[This volume is divided into three parts. Part I is concerned with problems of definition and measurement arising in the study of census material and other labour statistics. Part II is a descriptive analysis of the United States working

force, its age and sex composition, number of earners in the family, occupational distribution, unemployment of different types and so on. Part III is devoted to an elaboration of the authors' central thesis that "working force analysis emerges from the entire social, economic, political and cultural milieu," and contains discussion of productivity and technical change, and also of such questions as the attitude to work and the desired size of the family in relation to the social environment and the stage of economic development.]

JAMES (C. M.). Measuring Productivity in Coal Mining. A Case Study of Multiple Input Measurement at the County Level in Pennsylvania, 1919–1948. Wharton School of Finance and Commerce Research Report No. 13. Philadelphia: University of Pennsylvania, 1952. 9″. Pp. xi + 96. $2.00.

[This is a scholarly case study of multiple input measurement, based on data of coal-mining in the state of Pennsylvania in the 1919–48 period. In addition to labour input, statistical measures of such non-labour input factors as capital investment, power, fuel and other supplies and of management are devised and their influence measured. The author proposes kilowatt hour of energy per ton of coal mined as a good indicator of several non-labour inputs; notably power and by reflection the utilisation of mechanical equipment. He emphasises the importance of rate of operations as a factor affecting productivity levels in mining. Although the data available for his study were not sufficient to allow the author to combine his multiple ratios, *i.e.*, to attach quantitative importance to the several factors in their influence on productivity, this is nevertheless a valuable contribution to the study of productivity measurement.]

KEYES (LUCILE S.). Federal Control of Entry into Air Transportation. Cambridge, Mass.: Harvard University Press, 1951 (London: Geoffrey Cumberlege, 1952). 8½″. Pp. 405. 40*s*.

[To be reviewed.]

KNIGHT (B. W.) and HINES (L. GREGORY). Economics. New York: Alfred A. Knopf, 1952. 9″. Pp. vi + 917. $5.75.

[To be reviewed.]

LANCASTER (JOHN LITTLEPAGE). County Income Estimates for Seven Southeastern States. Virginia: Bureau of Population and Economic Research, 1952. 11″. Pp. iii + 246. $5.

[The Conference on the Measurement of County Income, which was set up in 1949 by a group of U.S. scholars interested in county income data, included the economics departments or business research agencies of the universities of Alabama, Georgia, Kentucky, Mississippi, North Carolina, Tennessee and Virginia, and the Tennessee Valley Authority. This is the first report of the Conference's work in marshalling the statistics available for county income estimates. The detailed income estimates for the 723 counties of the seven States comprising the Conference area form the major part of the report which also gives a brief account of the method involved. The estimates relate to 1939 and 1947, and the method is, briefly, one of distributing the component amounts of the Department of Commerce series of State income estimates by counties and in the case of Virginia by cities. There were seventy components of the Department of Commerce series in 1947, and these have been allocated in proportion to some closely related data. A full statement of procedure does not appear in this report, but can be obtained by those interested in the form of a separate technical supplement.]

LONG (C. D.). The Labor Force in War and Transition: Four Countries. Occasional Paper No. 36. New York: National Bureau of Economic Research, 1952. 9″. Pp. 61. $1.00.

[This useful monograph discusses the war-time experience in labour mobilisation of the United States, Great Britain, Canada and Germany, and considers the labour supply outlook for the United States in the event of another war. Some interesting suggestions are included, *inter alia*, on the factors determining the number of women needed for household duties and on the weakness of German war-time man-power policy. The author is inclined to attribute the latter to the conviction of Germany's rulers during the crucial years that victory could be achieved without complete mobilisation.]

MAXWELL (JAMES A.). Federal Grants and the Business Cycle. New York: National Bureau of Economic Research, 1952. 9½". Pp. 1 + 122. $2.00.

[A study of the part which federal grants to state and local governments has played and might in the future play in the control of business cycles, especially in regard to the timing of public works. Much useful information is also included on federal grants generally.]

MILLER (W.) (Ed.). Men in Business. Essays in the History of Entrepreneurship. Cambridge, Mass.: Harvard University Press (London: Geoffrey Cumberlege), 1952. 9½". Pp. ix + 350. 32*s.* 6*d.*

[To be reviewed.]

MONETARY POLICY AND THE MANAGEMENT OF THE PUBLIC DEBT. Parts I and II. Washington: U.S. Government Printing Office, 1952. 9". Pp. ii + 1302.

[To be reviewed.]

MONEY MARKET ESSAYS. New York: Federal Reserve Bank, 1952. 10". Pp. 1 + 33.

[This is an extremely useful collection of essays, most of them reprinted from the *Monthly Review of Credit and Business Conditions* of the Federal Reserve Bank of New York, giving in succinct form much information that is otherwise scattered or difficult of access. The subject of the six essays are the money market, member borrowing from the Federal Reserve Banks, Federal funds, the commercial paper market, bankers' acceptances and financing security brokers and dealers.]

MOORE (W. E.). Industrialization and Labor. Social Aspects of Economic Development. Ithaca and New York: Cornell University Press for the Institute of World Affairs, 1951 (London: Geoffrey Cumberlege, 1952). 8½". Pp. xx + 410. 32*s.* 6*d.*

[To be reviewed.]

MOULTON (HAROLD G.). America's Wealth. Washington: Brookings Institution, 1952. 11". Pp. 1 + 48.

[A popular survey of the triumphs of the American economic system during the last hundred years and of its condition and prospect to-day, profusely illustrated with photographs and original illustrations.]

NATIONAL PLANNING ASSOCIATION. Land Reform in Asia. A Case Study. By C. Clyde Mitchell. Planning Pamphlets No. 78. Washington: NPA, 1952. 8". Pp. vii + 34. 50 cents.

[A study of the land-reform programme carried out by the United States authorities in South Korea between 1946 and 1948, especially with regard to the disposal of land formerly owned by the Japanese.]

PENROSE (EDITH T.). The Economics of the International Patent System. Baltimore: Johns Hopkins Press, 1951 (London: Geoffrey Cumberlege, 1952). 8½". Pp. xv + 247. 32*s.*

[To be reviewed.]

SIEVERS (A. M.). General Economics. An Introduction. Chicago: Lippincott, 1952. 9". Pp. xvii + 812. $5.50.

[To be reviewed.]

SMITH (T. LYNN) and HITT (H. L.). The People of Louisiana. Baton Rouge, La.: Louisiana State University Press, 1952. 9½". Pp. xviii + 272. $5.00.

[This comprehensive survey of the demographic characteristics of the state of Louisiana, including particulars of educational status, occupation and religious affiliations, is based on a series of specialised studies published over the last twenty years.]

SONNE (H. CHRISTIAN). Monetary Policy and the Management of the Public Debt. Washington: National Planning Association, 1952. 7½″. Pp. iii + 23.

[This pamphlet by the Chairman of the Board of Trustees of the National Planning Association is mainly concerned with the relation between the Federal Reserve System and the executive branch of the government.]

TINTNER (GERHARD). Econometrics. New York: John Wiley & Sons (London: Chapman and Hall), 1952. 9″. Pp. vii + 370. 46*s*.

[To be reviewed.]

UMBREIT (MYRON H.), HUNT (ELGIN F.) and KINTER (CHARLES V.). Fundamentals of Economics. London: McGraw-Hill Book Co., 1952. 9″. Pp. v + 506. 42*s*. 6*d*.

[To be reviewed.]

WALTER (J. T.). Foreign Exchange Equilibrium. University of Pittsburgh Press, 1951. 8½″. Pp. 178. $4.00.

[This Ph.D. dissertation of the University of Pittsburgh discusses the theory of the foreign exchanges in the light of inter-war experience. The author argues that exchange-rate variations are of dubious value as means to the attainment either of domestic price stability or of equilibrium in the balance of payments.]

WHITTLESEY (C. R.). Readings in Money and Banking. New York: W. W. Norton, 1952. 8½″. Pp. xiii + 480.

[The market in volumes of "readings" reaching us from the United States is becoming increasingly competitive. But perfect competition is still not yet in sight, and, as Professor Whittlesey is at pains to point out in his preface, his product is differentiated from its predecessors in a number of noteworthy respects. The most striking of these is the extreme brevity of most of the items, the average length being less than five pages. This is achieved by including part only of the more substantial articles quoted, and by incorporating numerous brief extracts from books, official documents and newspapers. The result is that the collection does serve rather a different purpose from most of the volumes of readings so far available. Inevitably a sustained train of reasoning can hardly survive when reduced to such small compass, and the student will have to seek elsewhere if he wishes to become acquainted with the standard literature and the quality of thought of the subject's leading exponents. The advantages he will derive from this book are, instead, rather similar to those to be obtained from turning over more or less idly the pages of the current journals as they reach the library; odd ideas and pieces of information are gleaned which may be of no small assistance to the student in getting the subject into the right perspective. Professor Whittlesey's collection is to be warmly recommended to the student who understands the value of controlled browsing, and is at the same time conscious of its limitations.]

French

CAPET (MARCEL F.). L'Interaction des Marchés; La Liaison Horizontale. Paris: Armand Colin, 1952. 10″. Pp. 6 + 203.

[To be reviewed.]

GUIHENEUF (ROBERT). Le Problème de la Theorie Marxiste de la Valeur. Paris: Armand Colin, 1952. 10″. Pp. 6 + 194.

[To be reviewed.]

GUITTON (HENRI). L'Objet de l'Économie Politique. Paris: Marcel Rivière, 1952. 8½″. Pp. 10 + 196.

[To be reviewed.]

LOGERES (DE MARC). Les Mouvements de Prix aux États-Unis dans la période de reconversion. Paris: Armand Colin, 1952. 10″. Pp. 6 + 223.

[To be reviewed.]

MAILLET (J.). Histoire des Faits Economiques. Paris: Payot, 1952. 9″. Pp. 9 + 356. 800 frs.

[To be reviewed.]

The Pattern of Life in Poland. I. Preliminary notes on Political Institutions in Poland. By ANTONI NOWAK. 8½″. Pp. 52. II. The Supreme Organs of Authority. By ANTONI NOWAK. 8½″. Pp. 79. III. Primary, Secondary and Adult Education. By TADEUSZ SULIMIRSKI. 8½″. Pp. 42. IV. The Universities, Professional Education and Science. By TADEUSZ SULIMIRSKI. 8½″. Pp. 65. Paris: Mid-European Research and Planning Centre, 1952.

[These are the first instalments of an ambitious new series to be completed in nineteen parts, nine of which will deal with economic subjects. The authors make no attempt to conceal their hostility to the present régime in Poland, but this does not prevent them from providing extremely painstaking and careful treatment of their respective topics on the basis of the often inadequate information available. The principal sources used consist of official statutory instruments and pronouncements of communist leaders.]

PROBLÈMES DE PLANIFICATION. Paris: Centre de Politique Étrangère, 1952. 10½″. Pp. ii + 167.

[To be reviewed.]

SAUVY (ALFRED). Théorie Générale de la Population. Vol. I. Économie et Population. Paris: University Press of France, 1952. 9″. Pp. 2 + 370.

[To be reviewed.]

VERHULST (MICHEL). Les Industries d'Utilité Publique. Paris: University Press of France, 1952. 9½″. Pp. 8 + 254.

[To be reviewed.]

VINCENOT (YVES). Le Service de Santé en Grande-Bretagne. Paris: Armand Colin, 1952. 9½″. Pp. vi + 263.

[To be reviewed.]

German

CARELL (ERICH). Allgemeine Volkswirtschaftslehre. 5th Edition. Munich: Richard Pflaum Verlag, 1951. Pp. 476.

[This is the 5th Edition of a standard German text-book written by the Professor of Economics at Würzburg. Being a specialist in distribution theory, he not unnaturally lays stress on factor pricing. Otherwise the text-book follows the rather rigid German pattern derived from the Austrian School with occasional short digressions into the field of the history of economic thought.]

GERLOFF (WILHELM) and NEUMARK (FRITZ). Handbuch der Finanzwissenschaft. Tübingen: J. C. B. Mohr, 1951. 11″. Pp. 401 + 480.

[The second edition of the famous *Handbuch der Finanzwissenschaft* is to appear in some twenty-eight parts. The first part appeared in September 1950, and it is hoped to complete publication by 1953. Parts 3 to 6 cover the conclusions of the general articles on public finance, the financial history of important Western countries and the first contributions to a series of articles on the development of the science of public finance. The concluding articles on public finance and economics by Papi and public finance and monetary economics by Grossman are painfully orthodox in their approach. The neglect of modern literature is all too obvious. The articles on financial history of the great powers are nothing if not comprehensive, and there is a fine study of Great Britain by Mrs. U. K. Hicks. So far as the history of the science of public finance is concerned, special mention should be made of the outstanding article on the history of the subject in Germany since 1800 written by Erwin V. Beckerath. The account of the work of Lorenz v. Stein, Schäffle, Wagner and Sax is a remarkable achievement in exposition, and his careful treatment of lesser-known writers is noteworthy.]

PFEIFFER (GERHARD). Strukturwandlungen und Nachkriegsprobleme der Wirtschaft Belgiens. No. 19. Kiel, 1952. 8". Pp. iv + 112.

[This is No. 19 of the series of studies published by the Institut für Weltwirtschaft, and it follows a similar pattern to the other studies treating various European countries and their post-war economic problems. The approach is descriptive rather than analytical, but the presentation is competent. As would be expected, a considerable part of the work is taken up with Belgium's international economic relations.]

SALIN (EDGAR). Geschichte der Volkswirtschaftslehre (Fourth Edition). Tübingen: J. C. B. Mohr, 1951. Pp. 205. Swiss Fr. 10.80.

[This is the fourth edition of a standard German text-book on the history of economic thought which first appeared in 1923. A special feature of the book is the pre-history of economic thought. In the final chapters on modern economic thought which are highly condensed, the author displays a much wider knowledge of Anglo-Saxon literature than is usually found in German surveys of this kind. This is instanced in his account of the Boulding criticisms of Samuelson's exposition of dynamic economics in the *Survey of Contemporary Economics*.]

SCHNEIDER (E.). Wirtschaftlichkeitsrechnung. Berne: A. Francke (Tübingen: J. C. B. Mohr), 1951. 9½". Pp. viii + 156. Paper DM. 10.80; cloth DM. 13.60.

[This book by Professor Schneider is one of a series of handbooks on the social sciences published for the benefit of German-speaking students under the general editorship of Professors Salin and Spiethoff. The present volume (which is a translation of a work previously published in Danish in 1944) deals with a number of aspects of capital theory as they affect the entrepreneur. *Wirtschaftlichkeitsrechnung*—which may be translated as Economic Calculus—has become accepted in Germany as the title of a branch of economics to which there is no direct correspondent in the English literature. The subject matter is similar to some of Boulding's recent writings on income and assets, to which there are frequent references, as there are to the writings of Irving Fisher. In brief, the volume is largely concerned with the elaboration of the proposition that the entrepreneur maximises the present (discounted) value of expected income flows. The treatment is clear, elementary and replete with illustrations of particular cases; there is a plethora of arithmetical examples to support the algebra and geometry. The sections dealing with applications of the general theory, especially those on depreciation and obsolescence, are valuable, though the full implications of these for accounting practice are not given. The treatment of expectations, their revision and clarification, is also not very satisfactory, being confined to a concluding chapter on Imponderables. On the whole, this book forms a useful introduction to a difficult subject.]

Swiss

FEIN (ERWIN). Bilanzbildsequenzen. Bern: A. Francke, 1951. Pp. 168. Swiss Fr. 18.50.

[This is a curious book. It begins with an explanation of double-entry book-keeping, and the reader is led to believe that the technique of double entry is to be used to explain the nature of economic model building. When it comes to the point of examining various models, such as the Keynesian static and dynamic multiplier and Hayek's Ricardo Effect, the apparatus of accounting is nowhere in evidence, and we are left with a few routine criticisms of Keynesian analysis which confuse Keynesian assumptions with Keynesian methodology. In fairness to the author it must be mentioned that he has only caught up with the rather naïve literature on full-employment policy. On the other hand, it is depressing to find that a scholar with accountancy at his finger-tips should have got so little out of his study of national book-keeping (the work of Derksen is singled out for mention), and while prepared to regard some forms of model building as "intellectual spivvery," is nevertheless content to draw up simple accounts without reference to national-income statistics.]

TRUGENBERGER (ALBERTO E.). San Bernardino da Siena. Bern : A. Francke, 1951. 9″. Pp. v + 142. Swiss Fr. 14.

[This is a well-reasoned and well-documented study of the views of San Bernardino da Siena on problems of economic ethics, particularly the problem of usury, viewed in relation to the economic development of Italy in the fifteenth century and the growth in the importance of capital which it witnessed.]

Dutch

FUZ (J. K.), Ph.D. Welfare Economics in English Utopias. The Hague : Martinus Nijhoff, 1952. 9½″. Pp. 1 + 112.

[To be reviewed.]

GOUDRIAAN (IR J.). Economie in Zestien Bladzijden of Inleiding tot de Analytische Economie. Amsterdam : J. H. de Bussy, 1952. 9½″. Pp. v + 249.

[To be reviewed.]

Danish

AXEL NIELSEN. Til Minde. København : Gyldendalske Boghandel, 1951. 10″. Pp. 10 + 260.

[A collection of essays by various Scandinavian economists in honour of Professor Axel Nielsen, who died in May 1951.]

Italian

FANNO (MARCO). La teoria economica della colonizzazione. Edizioni Scientifiche Einaudi, 1952. 8½″. Pp. 7 + 385.

[In this volume Professor Fanno reproduces the theoretical parts of his earlier works on land development in new countries (reviewed in the ECONOMIC JOURNAL of March and September 1906 by Marion Phillips), which he considers have not been superseded by later writings, and adds substantial new sections discussing subsequent developments in the light of that theory.]

LUZZATTO (GINO). Storia Economica dell'età Moderna e Contemporanea. Second Edition. Italy, 1952. 10″. Pp. vii + 568.

[The second volume of this work by the well-known historian, dealing with the period since the eighteenth century, is here revised and brought up to date to cover events till 1950.]

MEDICI (G.) and ORLANDO (G.). Agricoltura e Disoccupazione. Bologna : Nicola Zanichelli, 1952. 10″. 15 + 304.

[This monograph on the agricultural labourers of the lower Po valley, which is based on a thorough and careful study of the statistical and other evidence available, is the first of a projected series on problems of agricultural unemployment in Italy.]

PAPI (GUISEPPE UGO). The First Twenty Years of the Bank for International Settlements. Rome : Bancaria, 1951. 8½″. Pp. 8 + 270. L. 1,500.

[To be reviewed.]

Spanish

FERNANDEZ (RAFAEL). La Jornada. Teoria del Valor Economico. Madrid : Editorial Dossat, 1952. 8½″. Pp. 6 + 268.

[To be reviewed.]

Central and South American

CAMARGO (ENRIQUE PEÑALOSA). El Régimen del Control de Cambios en Colombia. Bogota: Cortes, 1951. 10″. Pp. 12 + 71.

[This dissertation on exchange control in Colombia covers the period from 1923 till the present time.]

PROGRAMA NACIONAL DE ACCION ECONOMICA. La Habana: Junta Nacional de Economia, 1951. 9″. Pp. xviii + 239.

[A discussion of the problems of international technical assistance to backward countries, with special reference to the Caribbean area.]

TABLAS DE PRECIOS DE COMPRA DE VALORES. Mexico: Bank of Mexico, 1952. 9½″. Pp. 7 + 507.

[A collection of tables for the calculation of compound interest, the value of annuities, etc.]

Japanese

TADAO YANAIHARA. Catalogue of Adam Smith's Library. Tokyo: Iwanami Shoten, 1951. 8½″. Pp. v + 126.

[To be reviewed.]

Official

BRITISH

AN ECONOMIC SURVEY OF THE COLONIAL TERRITORIES. Vol. I. Central African and High Commission Territories. Northern Rhodesia, Nyasaland, Basutoland, Bechuanaland, and Swaziland. London: H.M. Stationery Office, 1952. 12½″. Pp. 4 + 106. 25*s*.

[This report is designed to perform for the territories covered by it the same function as the annual *Economic Surveys of the Colonial Empire*, published before the war, of which the last (that for 1937) appeared in 1940. It deals with the general background, productive activities, finance and trade, development and other miscellaneous matters of each territory in turn in considerable detail. It will be once again the main statistical reference book for the territories concerned, and it is very valuable to have current figures again available. Five further reports will deal with the rest of the Colonial Territories.]

MINISTRY OF FOOD. The Urban Working-Class Household Diet, 1940–1949. London: H.M. Stationery Office, 1951. 10″. Pp. vi + 114. 3*s*. 6*d*.

[The value of family budget inquiries to economists and nutritionists is becoming increasingly appreciated in this country. A share in the credit for this must go to the Ministry of Food, which since 1940 has been collecting information on food consumption at regular intervals from random samples of households in the United Kingdom. This report is the first of a series to be issued by the National Food Survey Committee (under the chairmanship of Dr. N. C. Wright), which was appointed to publish the available information. It deals mainly with the average annual consumption of food in urban working-class households in the war and post-war years up to 1949 and, where possible, comparisons are made with pre-war consumption levels. The accent has largely fallen on dietary considerations, and from the economist's point of view it is to be regretted that there is no information on how consumption levels varied with household income. The welcome decision taken in 1950 to extend the scope of the survey to cover all classes of the population and to include figures of household income will make the National Food Survey a continuous source of information of value in many fields.]

REGIONAL STUDIES OF THE AUSTRALIAN WOOL-GROWING INDUSTRY. 1. Australian Capital Territory. 2. Longreach—Blackall District, Queensland. Canberra: Department of Commerce and Agriculture, 1951. 9½". Pp. 1 + 58.

[Particulars are included of the geographical characteristics of the areas surveyed and of the financial results of farming generally and of sheep farming in them in recent years.]

Report of the Committee to Study Combines Legislation and Interim Report on Resale Price Maintenance. Ottawa: Cloutier, 1952. 9½". Pp. 3 + 72.

[This report does not suggest any fundamental changes in the principles of the present Combines Investigation Act, but recommends, on grounds, which, it must be confessed, do not seem entirely convincing, that there should be a separation of functions between investigation and research on the one hand, and appraisal and report on the other, both these functions being at present exercised by the Commissioner responsible for the administration of the Act. The report on Resale Price Maintenance comes out strongly against the practice, which shows signs of becoming increasingly prevalent in Canada, and is a good statement of the case against it. It is admitted that resale price maintenance helps to prevent the objectionable use of "loss-leaders," but the Committee believes this abuse, where it occurs, should prove susceptible to control by other means.]

AMERICAN

ECONOMIC CO-OPERATION ADMINISTRATION. Thirteenth Report to the Congress. Washington: U.S. Government Printing Office, 1951. 9". Pp. iii + 95. 40 cents.

[This report describes the activities of E.C.A. in the quarter ended June 30, 1951.]

JOINT ECONOMIC REPORT. Washington: U.S. Government Printing Office, 1952. 9". Pp. ii + 134.

[Rather more than half of this document is taken up with a survey on the economic outlook in the United States, compiled by the Staff of the Joint Committee on the Economic Report. In it an attempt is made to assess the likely strength of inflationary pressure in the fiscal year 1953. It is calculated that potential inflationary excess consumer demand may amount to some $5 billion, without taking into account the possibility of further cost-induced inflation or increased spending out of liquid assets. Looking farther ahead, the authors give estimates suggesting an increase in Gross National Product from $166 billion at 1939 prices in 1951 to $196 billion at 1939 prices in 1955.]

OTHER COUNTRIES

MINISTÈRE DES FINANCES. Statistiques et Études Financières. No. 11. Paris: Imprimerie Nationale, 1951. 10½". Pp. 416 + 583.

[This document, published by the French *Ministère des Finances*, is the first of a new series of studies of tax systems. This volume deals with the U.S. and U.K. systems, and is to be followed by others dealing with the more important European countries, the U.S.S.R. and Canada. The authors succeed in bringing together a mass of facts about the American and British tax systems. For the U.S. we have surveys of the taxes on income, capital and consumption and of social-security contributions, together with brief descriptions of the administrative bodies concerned. The U.K. is not so complete—in particular nothing on local authorities or National Insurance is included—but nevertheless there is a good coverage of the work of the Inland Revenue and the Customs and Excise Department. For both countries we are not only given present tax-rates and tax-structures (including Mr. Butler's budget in March 1952) but there are many tables showing the main changes in taxes over a long period of time—in fact, all years since 1913 for the U.K. It is not easy to find so much useful information (*e.g.*, U.K. wear-and-tear allowances, excise rates, purchase-tax schedules, stamp-duty rates, customs-duty rates) all brought together in one volume. A fairly

thorough scrutiny failed to reveal any major inaccuracies. Particularly interesting are specimen copies of the usual tax-return forms in use in the U.S. and the U.K. Altogether, the Ministère des Finances is to be congratulated on its enterprise.]

INTERNATIONAL

BANK FOR INTERNATIONAL SETTLEMENTS. Twenty-Second Annual Report. Basle, 1952. 12″. Pp. 2 + 265.

[To be reviewed.]

Conditions of Work in the Fishing Industry. Geneva: International Labour Office. London: Staples Press, 1952. 9½″. Pp. 2 + 215. 7*s.* 6*d.*

[Particulars are included on numbers employed, on earnings, hours and conditions of work and on social-security schemes applying to fishermen in the leading maritime nations of the world.]

European Companies. Strasbourg: Council of Europe, 1952. 9″. Pp. 1 + 66.

[A discussion of the various problems raised by the proposal to establish a category of "European Companies," the legal position of which would be governed by a special international convention instead of by the laws of the countries in which they operated. Reference is made to a number of precedents.]

Recent Changes in Production. Supplement to World Economic Report, 1950–51. New York: United Nations, 1952. 10½″. Pp. 1 + 120. 7*s.* 6*d.*

[To be reviewed.]

Review of International Commodity Problems 1951. New York: United Nations, 1952. 11″. Pp. iii + 54. 4*s.* 6*d.*

[This annual survey contains, as usual, two sections, a brief general section and appendices of one to three pages in length on twenty-three of the most important commodities. The general section this year surveys not only the changes in prices and supplies in 1951 but also, very shortly, general developments in the period since the end of the war. The analysis here is too brief to do more than indicate in very general outline what happened; the chapter on inter-governmental consultation and action on particular commodities does, however, provide a useful reference to earlier reports describing particular agreements, and the chapter on information to sources of statistics. The appendices on individual commodities concentrate on 1950/51 or 1951 and provide a good deal of statistical information and charts; they are not uniform for different commodities.]

Report of the United Nations Economic Mission to Chile 1949–1950. New York: United Nations, 1952. 11″. Pp. iii + 38. 3*s.*

[The members of the mission were Carl Iversen, Simeon E. Leland and Erik Lindahl. The first section of this report, which is dated February 1951, considers short-run problems, in particular the paramount need to check inflation, and recommends to this end the adoption of a number of radical measures, including the imposition of a temporary general price step, the raising of an obligatory loan and a policy of discriminatory credit restriction designed to discourage investment of low social utility, such as the construction of luxurious apartment houses. The second section, on long-run problems, is concerned mainly with public finance, and discusses means of rationalising the budgetary system and of making the tax structure more equitable and efficient. The value of this interesting report would have been enhanced for the general reader if rather more background material had been included on the structure of the Chilean economy and its evolution in recent years.]

Sample Surveys of Current Interest (Fourth Report). New York: United Nations, 1952. 10½″. Pp. 3 + 56. 3*s.* 9*d.*

[Brief summaries of the subject matter and methods of some sixty sample surveys recently carried out or in process in different countries.]

Statistical Yearbook 1951. United Nations. London: H.M. Stationery Office, 1952. 12″. Pp. 3 + 616. 45*s*.

[This compilation continues to improve with each issue. The chief innovation this year is the inclusion of a series of tables on consumption, which show the volume of consumption in physical units of the principal foodstuffs and raw materials. Substantial additions have also been made in the section on public finance.]

Statistics of National Income and Expenditure. New York: United Nations, 1952. 10″. Pp. iii + 58. 3*s*. 9*d*.

[This is the first of a series which it is proposed should appear twice yearly, bringing together the latest available national income statistics for as many countries as possible. The years covered in the present issue are 1938–50, with an appendix taking the figures back to 1919 where possible. The main tables, which are extremely clear and well arranged, give particulars of national income and expenditure in total and per head in real and money terms, and of the division of national income by industrial origin and distributive share. Full discussion of methods and concepts is reserved for the national-income yearbook series.]

Summary of Recent Economic Developments in Africa. Supplement to World Economic Report, 1950–51. New York: United Nations, 1952. 10½″. Pp. 1 + 49. 3*s*. 9*d*.

[To be reviewed.]

Summary of Recent Economic Developments in the Middle East. Supplement to World Economic Report 1950–51. New York: United Nations, 1952. 10½″. Pp. 1 + 99. 3*s*. 9*d*.

[To be reviewed.]

United Nations Department of Economic Affairs. Public Finance Survey No. 2. India. New York: United Nations, 1951 (London: H.M. Stationery Office, 1952). 9″. Pp. vi + 101. 5*s*.

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United Nations Economic Commission for Europe. Methods and Techniques of Financing Housing in Europe. Study prepared by the Industry and Materials Division. Geneva: United Nations, 1952. 11″. Pp. vii + 275.

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